

**IDENTIFYING ORGANIZATIONAL LEARNING  
DIMENSIONS THAT PROMOTE PATIENT SAFETY  
CULTURE: A STUDY OF HOSPITAL PHARMACIES IN  
KUWAIT**

**W. ABDALLAH**

**PhD**

**UNIVERSITY OF BRADFORD**

**2019**

## ABSTRACT

The need for a positive safety culture in healthcare is essential. It not only advances the prevention and reduction of possible medical errors and threats to patient safety, but also enhances the overall quality of healthcare services provided, especially in respect of medication safety. While the evolution and surge in hospital pharmacies has bolstered treatment possibilities, the risk of harm to patients has also increased as errors in the provision of medication by pharmacists create a threat to patient safety. The increasing need to deploy a protective measure to enhance patient safety culture in the healthcare is imperative suggesting the necessity for the inclusion of new knowledge through the process of organizational learning.

Safety culture and organizational learning are complex constructs which may be measured, to some extent, by validated instruments. The current study seeks to assess the reliability and validity of a translated Arabic version of the learning organization survey short-form (LOS-27), and the pharmacy survey on patient safety culture (PSOPSC) through the evaluation of pharmacy staff's knowledge about organizational learning and patient safety culture in public and private hospital pharmacies of Kuwait. The aim is to explore the relationship between organizational learning and patient safety culture in hospital pharmacy settings through the LOS-27 and PSOPSC instruments. In addition, the relationship between the different dimensions of organizational learning and pharmacy patient safety culture is explored.

The results highlighted the adequacy of the Arabic translation of the LOS-27 and PSOPSC questionnaires as they depicted the reliability and validity consistent with the original surveys results. It was also found that in the context of Kuwaiti pharmacies, organizational learning was positively related to performance of the staff in creating a positive patient safety culture. Several dimensions of the organizational learning showed association with various elements of patient safety culture in pharmacy settings, specifically: training, management that reinforces learning, and a supportive learning environment had the strongest effects on the pharmacy patient safety culture dimensions.

The contribution of this thesis is in three areas. First, it is the first research that links organizational learning with patient safety culture in a hospital pharmacy setting (theoretical contribution). Second, the research is useful for research scholars as it combines the two questionnaires, LOS-27 and PSOPSC, on the same participants using a single form to explore the relationship between organizational learning and patient safety culture in a hospital pharmacy setting and their dimensions (method contribution). Third, this research contributed to the currently limited literature that examines patient safety culture and organizational learning by considering the context of Kuwait (Contextual Contribution).

**Keywords:** Organizational learning, Patient Safety Culture, Hospital Pharmacy, Validation, Measurements, Kuwait.

## **ACKNOWLEDGEMENTS**

First and foremost, I would like to thank Allah who enabled me to pursue a doctorate and for giving me the perseverance to achieve my aims at every stage of my life.

I would like to express my special appreciation and thanks to my supervisors. Dr Craig Johnson, Director of MBA Studies at the Faculty of Management, Law and Social Sciences, acted as my first supervisor, I would like to thank him for his continuous support and guidance throughout my research. He was a catalyst whose patience was only surpassed by the generosity of his time. Professor Mohammed Amin Mohammed, Deputy Director of the Bradford Institute for Health Research, who acted as a second supervisor provided help invaluable to developing the three research papers. Professor Mohammed's enthusiasm for research knows no limits, and he always made himself available to answer my questions. I would also like to express my gratitude for the assistance of Dr Christian Nitzl from the Federal Armed Forces of Germany for reviewing the results of the research related to Smart-PLS. I would like to thank the anonymous editors and reviewers who, through their insightful comments and suggestions, have enhanced the articles that are a crucial part of this thesis.

Thank you to my close friends, Dr Fawaz Azeezia, Tarek Sabbagh, Belal Sabbagh, Qutaiba Al Khaldi and Abdurahman Aziza for sharing thoughts, feelings and fantasies.

Finally, I am grateful to my family: my father Abdulrahman, my wife Methal, and my daughters Raghad, Sarah, and Noor, without whose encouragement and support this project could not have been completed.

**Wael Abdallah**

# LIST OF CONTENTS

ABSTRACT .....	i
ACKNOWLEDGEMENTS .....	ii
LIST OF TABLES.....	xi
LIST OF FIGURES .....	xii
LIST OF ABBREVIATIONS .....	xiii
LIST OF PAPERS.....	xv
PART ONE.....	1
INTRODUCTION CHAPTER .....	1
CHAPTER 1 .....	2
1 INTRODUCTION.....	2
1.1 BACKGROUND TO THE RESEARCH.....	2
1.1.1 Patient Safety Culture in Hospital Pharmacies in Kuwait .....	4
1.1.2 The Instruments of this Research .....	5
1.2 RESEARCH PROBLEM .....	5
1.3 RESEARCH NEEDS .....	7
1.4 AIMS AND OBJECTIVES .....	9
1.4.1 Overall Aim .....	9
1.4.2 Objectives .....	9
1.5 RESEARCH QUESTIONS.....	10
1.6 RESEARCH SIGNIFICANCE .....	10
1.7 STRUCTURE IN THE THESIS.....	11
PART TWO.....	15
THEORY CHAPTERS .....	15
REVIEW OF THE LITERATURE .....	15
CHAPTER 2.....	17
2 THEORIES OF LEARNING AND ORGANIZATIONAL LEARNING .....	17
2.1 INTRODUCTION .....	17
2.2 WORK-BASED LEARNING.....	17
2.3 SYSTEMIC VIEW OF LEARNING.....	19
2.3.1 Single-Loop Learning (Following the Rules) .....	20
2.3.2 Double-Loop Learning (Changing the Rules).....	21
2.3.3 Triple-Loop Learning (Learning about Learning) .....	22
2.4 INDIVIDUAL, GROUP AND ORGANIZATIONAL LEARNING .....	23
2.4.1 Individual Learning.....	23

2.4.2	Group Learning .....	25
2.4.3	Organizational Learning .....	26
2.4.3.1	Emergence of Organizational Learning.....	26
2.4.3.2	Definitions of Organizational Learning .....	27
2.4.3.3	The Distinction between Organizational Learning and a Learning Organization .....	31
2.4.3.4	Organizational Learning Models .....	31
2.4.3.5	Dimensions of Organizational Learning .....	38
2.4.3.5.1	Supportive Learning Environment (SLE).....	38
2.4.3.5.2	Management that Reinforces Learning (MRL) .....	39
2.4.3.5.3	Experimentation (EXP).....	40
2.4.3.5.4	Training (TRN).....	41
2.4.3.5.5	Information Transfer (INT).....	42
2.4.3.5.6	Time for Reflection (TFR).....	42
2.4.3.5.7	Information Collection (INC).....	43
2.4.3.6	Organizational Learning in the Healthcare Industry .....	44
2.4.3.7	Critical Review to Organizational Learning .....	45
2.5	CHAPTER SUMMARY .....	47
CHAPTER 3.....		48
3	PATIENT SAFETY CULTURE – SETTING THE SCENE.....	48
3.1	INTRODUCTION .....	48
3.2	THE CONCEPT OF CULTURE .....	49
3.2.1	Definition of Culture .....	49
3.2.2	Development of Culture .....	50
3.2.3	Organizational Culture .....	52
3.3	SAFETY CULTURE.....	53
3.3.1	Safety Culture versus Safety Climate .....	54
3.3.2	Safety Culture in Healthcare .....	55
3.4	PATIENT SAFETY CULTURE.....	56
3.4.1	Definitions of Patient Safety Culture .....	57
3.4.2	The Relevance of Patient Safety Culture .....	58
3.4.3	Risk Management and Patient Safety Culture .....	58
3.4.4	Patient Safety Culture in Different Settings .....	59
3.4.4.1	Patient safety culture in primary care settings.....	59
3.4.4.2	Patient safety culture in hospital pharmacy settings .....	60
3.5	CHALLENGES AND BARRIERS TO PATIENT SAFETY CULTURE .....	61

3.6	CHAPTER SUMMARY .....	62
	CHAPTER 4.....	63
4	PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS – DEEP IMMERSION .....	63
4.1	INTRODUCTION .....	63
4.2	DEFINITIONS OF PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS .....	64
4.3	THE RELEVANCE OF PHARMACY PATIENT SAFETY CULTURE	65
4.4	ROLE OF PHARMACY STAFF IN PATIENT SAFETY CULTURE...	66
4.5	MEASUREMENT TOOLS OF PATIENT SAFETY CULTURE IN PHARMACY SETTINGS .....	68
4.5.1	National Survey of Pharmacy Practice in Hospital Settings .....	68
4.5.2	Pharmacy Safety Climate Questionnaire .....	69
4.5.3	Pharmacy Survey on Patient Safety Culture (PSOPSC).....	69
4.6	DIMENSIONS OF PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS .....	71
4.6.1	Physical Space and Environment .....	71
4.6.2	Teamwork .....	72
4.6.3	Staff Training and Skills .....	73
4.6.4	Communication Openness.....	73
4.6.5	Patient Counselling.....	74
4.6.6	Staffing work pressure and pace.....	75
4.6.7	Communication About Prescriptions Across Shifts .....	75
4.6.8	Communication About Mistakes.....	76
4.6.9	Response to Mistakes.....	77
4.6.10	Organizational Learning Improvement .....	79
4.6.11	Overall Perception of Patient Safety .....	79
4.7	CHALLENGES AND BARRIERS TO PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS .....	81
4.8	CHAPTER SUMMARY .....	82
	CHAPTER 5.....	83
5	THE CONNECTION BETWEEN ORGANIZATIONAL LEARNING AND PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS: CONCEPTUAL FRAMEWORK.....	83
5.1	INTRODUCTION .....	83
5.2	THE RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING AND PATIENT SAFETY CULTURE IN HOSPITAL PHARMACIES .....	83

5.2.1	Theories Based .....	84
5.2.2	Empirical Grounded Based .....	86
5.3	CONCEPTUAL FRAMEWORK .....	88
5.3.1	Existing Conceptual Models of Organizational Learning and Patient Safety Culture .....	88
5.3.1.1	Goh Model .....	88
5.3.1.2	Edwards Model .....	90
5.3.1.3	Singer Model.....	93
5.3.2	Conceptual Framework Model to Research .....	96
5.4	CHAPTER SUMMARY .....	99
PART THREE .....		101
METHOD CHAPTERS.....		101
CHAPTER 6.....		103
6	RESEARCH DESIGN.....	103
6.1	INTRODUCTION .....	103
6.2	RESEARCH GAPS.....	103
6.3	OVERALL AIM.....	105
6.4	OBJECTIVES .....	106
6.5	RESEARCH QUESTIONS.....	107
6.6	RESEARCH PARADIGM.....	107
6.6.1	Positivism.....	108
6.6.2	Interpretivism .....	108
6.6.3	Research Paradigm Adopted .....	109
6.7	RESEARCH APPROACH.....	110
6.7.1	Research Approach Adopted .....	111
6.8	RESEARCH DESIGN .....	111
6.8.1	Exploratory Research Design .....	112
6.8.2	Explanatory Research Design.....	112
6.8.3	Descriptive Research Design.....	112
6.8.4	Research Design Adopted .....	112
6.9	TIME DIMENSION IN RESEARCH STUDIES.....	113
6.9.1	Cross-Sectional Research .....	113
6.9.2	Longitudinal Research .....	113
6.9.3	Time Dimension Adopted.....	114
6.10	SUMMARY .....	114

CHAPTER 7.....	116
7 RESEARCH METHOD.....	116
7.1 INTRODUCTION.....	116
7.2 THE QUANTITATIVE RESEARCH APPROACH .....	117
7.2.1 Measurement Tool.....	117
7.2.1.1 Development of LOS-27.....	117
7.2.1.2 Development of PSOPSC.....	119
7.2.2 Translation of Questionnaires.....	120
7.2.3 Modifications of the Questionnaire.....	121
7.3 SAMPLING AND POPULATION .....	122
7.4 DATA COLLECTION .....	123
7.4.1 Data Collection Method Adopted .....	123
7.5 PILOT STUDY.....	124
7.6 DATA ANALYSIS .....	124
7.6.1 Statistical Analysis.....	125
7.7 METHODS ADOPTED .....	126
7.7.1 Sample and Response Statistics .....	127
7.7.2 Analysis Method of Validation of the Questionnaire.....	127
7.7.2.1 Confirmatory factor analysis.....	127
7.7.2.2 Positive Response Rate.....	128
7.7.3 Analysis Methods of the Relationship between Organizational Learning and Pharmacy Patient Safety Culture and their Dimensions .....	129
7.7.3.1 Hierarchical Component Model (HCM) .....	129
7.7.3.2 The Complete Model.....	129
7.7.3.3 The Explorative Model .....	131
7.7.3.4 Multi-group Analysis.....	134
7.8 ETHICAL CONDIDERATIONS.....	134
7.9 SUMMARY .....	135
PART FOUR .....	136
RESULTS AND DISCUSSION CHAPTERS .....	136
CHAPTER 8.....	138
8 STUDY I: VALIDATION OF ARABIC VERSION OF LEARNING ORGANIZATION SURVEY SHORT-FORM AND PERCEPTIONS OF PHARMACY STAFF ABOUT ORGANIZATIONAL LEARNING PROCESS....	138
8.1 INTRODUCTION.....	138



8.2	SAMPLE AND RESPONSE STATISTICS (STUDY I, STUDY II AND STUDY III) .....	138
8.3	RESULTS OF STUDY I.....	142
8.3.1	Descriptive Analysis of LOS-27.....	142
8.3.2	Confirmatory Factor Analysis of LOS-27.....	145
8.3.2.1	Indicator Reliability of LOS-27.....	145
8.3.2.2	Discriminant Validity of LOS-27 .....	147
8.3.2.3	Construct Reliability of LOS-27 .....	147
8.3.3	Positive Response Rate of LOS-27 .....	149
8.4	DISCUSSION .....	150
8.4.1	Discussion on CFA of LOS-27 .....	151
8.4.2	Discussion on Positive Response Rate of LOS-27 .....	152
8.4.3	New Contribution .....	153
8.4.4	Limitations and Recommendations for Further Study .....	154
8.5	CHAPTER SUMMARY .....	155
	CHAPTER 9.....	156
9	STUDY II: VALIDATION OF ARABIC VERSION OF PHARMACY SURVEY ON PATIENT SAFETY CULTURE AND PERCEPTIONS OF PHARMACY STAFF ABOUT PATIENT SAFETY CULTURE .....	156
9.1	INTRODUCTION.....	156
9.2	SAMPLE AND RESPONSE STATISTICS.....	156
9.3	RESULTS OF STUDY II.....	156
9.3.1	Descriptive Analysis of PSOPSC .....	156
9.3.2	Confirmatory Factor Analysis (CFA) .....	159
9.3.2.1	Indicator Reliability.....	159
9.3.2.2	Discriminant Validity of PSOPSC.....	161
9.3.2.3	Construct Reliability .....	164
9.3.3	Positive Response Rate.....	167
9.4	DISCUSSION .....	167
9.4.1	Discussion on CFA of PSOPSC.....	168
9.4.2	Discussion on Positive Response Rate of PSOPSC.....	169
9.4.3	New Contribution .....	171
9.4.4	Limitations and Recommended Further Study .....	172
9.5	CHAPTER SUMMARY .....	172
	CHAPTER 10.....	174

10	STUDY III: THE RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING AND PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS .....	174
10.1	INTRODUCTION .....	174
10.2	SAMPLE AND RESPONSE STATISTICS .....	174
10.3	RESULTS OF STUDY III .....	174
10.3.1	Descriptive Analysis of LOS-2 and PSOPSC .....	174
10.3.2	The Complete Model .....	175
10.3.2.1	Measurement Model of Complete Model .....	175
10.3.2.2	Inner/structural model of complete model .....	180
10.3.2.3	Multi-group Analysis .....	181
10.3.3	Explorative Model .....	182
10.3.3.1	Measurement model of explorative model .....	182
10.3.3.2	Inner/Structural model of explorative model .....	182
10.4	DISCUSSION .....	188
10.4.1	Discussion on Complete Model .....	188
10.4.2	Discussion on Multi-group .....	189
10.4.3	Discussion on Explorative Model .....	189
10.4.4	New Contribution .....	192
10.4.5	Limitations and Recommended Further Research .....	193
10.5	CHAPTER SUMMARY .....	193
	PART FIVE .....	195
	CONCLUSIONS .....	195
	CHAPTER 11 .....	196
11	CONCLUSIONS .....	196
11.1	INTRODUCTION .....	196
11.2	RESEARCH SUMMARY AND FINDINGS .....	196
11.3	CONCLUSIONS OF RESEARCH .....	199
11.4	CONTRIBUTION OF THE RESEARCH .....	201
11.4.1	Theoretical Contribution .....	201
11.4.2	Methodological Contribution .....	201
11.4.3	Contextual Contribution .....	202
11.5	PRACTICE IMPLICATIONS .....	202
11.6	LIMITATIONS .....	203
11.7	AGENDA FOR FUTURE RESEARCH .....	204
	REFERENCES .....	206

Appendix A: Pharmacy Survey on Patient Safety Culture & Learning Organization Survey -27 .....	227
Appendix B: Permission to translate LOS-27 and PSOPSC into Arabic .....	236
Appendix C: Arabic Version of LOS-27 and PSOPSC .....	238

## LIST OF TABLES

Table 0.1: Outlining the Five Parts of the Thesis and Placing the Chapters Accordingly .....	11
Table 2.1 Definitions of Organizational Learning Dimensions.....	43
Table 4.1 Definitions of patient safety culture in pharmacy settings.....	65
Table 4.2: Instruments of patient safety culture in pharmacy settings.....	70
Table 4.3 The Definitions of the 11 Dimensions of PSOPSC.....	80
Table 8.1 Demographic characteristics of the respondents .....	139
Table 8.2 Descriptive Analysis .....	142
Table 8.3 Factor Loadings .....	145
Table 8.4 Inter-correlations of the Seven Dimensions of LOS-27 .....	147
Table 8.5 Cronbach's $\alpha$ for all dimensions and positive response rate for dimensions and items of LOS-27 .....	148
Table 9.1 Descriptive analysis of PSOPSC .....	157
Table 9.2 Factor-loading for each item .....	160
Table 9.3 Inter-correlations of the 11 Dimensions of PSOPSC.....	163
Table 9.4 Cronbach's $\alpha$ and Positive Response Rate of PSOPSC .....	164
Table 10.1 Evaluation of Reflective Construct Measurements (First-Order) ...	176
Table 10.2 Evaluation of Formative Construct Measurements (Second Order) .....	179
Table 10.3 Evaluation of Inner Model of Complete Model with Multi-Group Analysis .....	181
Table 10.4 Discriminant Validity of the Construct Measurements of Explorative Model (Fornell-Larcker Criterion) .....	184
Table 10.5 Discriminant Validity of the Construct Measurements of Explorative Model (Cross Loadings).....	185
Table 10.6 Evaluation of Inner/Structure Model of Explorative Model.....	187

## LIST OF FIGURES

Figure 2.1 Double-loop learning model .....	21
Figure 2.2 Interaction between different learning processes.....	32
Figure 2.3 Crossan, Lane and White's model of organisational learning .....	33
Figure 2.4 (a) Individual or experiential learning .....	35
Figure 2.4 (b) Organisational learning.....	35
Figure 2.5 OADI model of individual learning.....	36
Figure 2.6 Conceptual model: Hypothesized relationships between learning and organizational performance outcomes .....	37
Figure 3.1 A model of organizational culture formation.....	51
Figure 3.2 Linking of organizational culture with patient safety .....	57
Figure 5.1 Conceptual framework linking organizational learning, teamwork, patient safety culture and outcomes .....	90
Figure 5.2 Patient safety improvement framework.....	93
Figure 5.3 Conceptual model: how learning impacts quality and safety improvement .....	95
Figure 5.4 Conceptual framework of the research .....	98
Figure 7.1 The Complete Model (Circles represent the construct measurements – second order constructs and the rectangles represent the domains and control variables).....	131
Figure 7.2 The Explorative Model .....	133
Figure 8.1 Participants .....	139
Figure 8.2 Staff Position of Participants .....	140
Figure 8.3 Experience of Participants .....	141
Figure 8.4 Working Hours of Participants .....	141
Figure 8.5 Positive Response Rate of Arabic Version of LOS-27 per Dimension .....	150
Figure 8.6 Path Diagram of Seven-Factor Model with Factor Loadings and Cronbach's alpha .....	154
Figure 9.1 Positive Response Rate of the Arabic Version of PSOPSC.....	167
Figure 9.2 Positive Response Rate of the Arabic Version of PSOPSC vs USA Version.....	171

## LIST OF ABBREVIATIONS

ADE	Adverse Drug Event
AHRQ	Agency for Healthcare Research and Quality
ASHP	American Society of Health System Pharmacists
AVE	Average Variance Extracted
CAM	Communication About Mistakes
CB-SEM	Covariance Based – Structural Equation Modelling
CFA	Confirmatory factor analysis
CMO	Communication Openness
CPS	Communication about Prescription across Shift
DLOQ	Dimensions of Learning Organization Questionnaire
HCM	Hierarchical Component Model
ICU	Intensive Care Unit
IOM	Institute of Medicine
LOS-27	Learning Organisation Survey-27
MaPSAF	Manchester Patient Safety Assessment Framework
MRL	Management that Reinforces Learning
NFI	Normal Fit Index
OADI- SMM	Observe- Assess- Design- Implement Shared Mental Models
OLI	Organizational Learning Improvement
OLQ	Organizational Learning Questionnaire
OLS	Organizational Learning Survey
OPP	Overall Prescription of Patient Safety
PLS-SEM	Partial Least Square – Structural Equation Modelling
PSCQ	Pharmacy survey climate questionnaire
PSE	Physical Space Environment
PSOPSC	Pharmacy Survey on Patient Safety Culture
PTC	Patient Counselling
RTM	Response To Mistakes
SPP	Staffing, Working Pressure and Pace
SPSS	Statistical package for the Social Sciences
SRMR	Standardized Root Mean Square Residual

STS	Staffing Training and Skills
TMW	Teamwork
VIF	Variance Inflation Factor
WHO	World Health Organisation

## LIST OF PAPERS

The present thesis has led to the following three papers:

- I. Abdallah, W., Johnson, C., Nitzl, C. and Mohammed, M. (2019)  
Validation of Arabic Version of Learning Organization Survey Short-form: Hospital Pharmacy Settings. *Hospital Pharmacy (Accepted)*
- II. Abdallah, W., Johnson, C., Nitzl, C. and Mohammed, M. (2019)  
Validation of Arabic Version of Pharmacy Survey On Patient Safety Culture. *International Journal of Healthcare Quality Assurance (Under review)*
- III. Abdallah, W., Johnson, C., Nitzl, C. and Mohammed, M. (2019)  
Organizational Learning and Patient safety: Hospital Pharmacy Settings. *Journal of Health Organization and Management (Accepted)*



# **PART ONE**

## **INTRODUCTION CHAPTER**

The purpose of Chapter 1 is to introduce the reader to the background of the research topic, research problem, the need for the study, research objectives, research questions, research significance and outline of the thesis. The emphasis is on the evidence that integration of organizational learning in public and private hospital pharmacies enhances a patient safety culture, which is likely to assist in decreasing the prevalent medication errors and adverse drug events (ADEs).

First, the background of the safety culture in the healthcare sector and organizational learning is explained. The recognition of hospital pharmacies as major drivers of patient safety and the development of an organizational culture into a more comprehensively-directed culture creates patient safety. Second, attention is drawn to the medication errors and ADEs that are prevalent; although great efforts have been made to improve patient safety and care, an optimal quality is still required. The limitation of this research is highlighted; the regional area of research that has been used in this research is Kuwait, and the study is tested to only this region. Therefore, the generalization of the results of this study to other regions may not be possible due to cultural differences in the extent of development of the healthcare sector. Third, the need for the present study in the region of Kuwait is explored. Finally, the four main objectives for this research project are stated.

# **CHAPTER 1**

## **1 INTRODUCTION**

### **1.1 BACKGROUND TO THE RESEARCH**

The concept of safety culture originated outside the healthcare sector, from areas such as aviation and nuclear industries in studies of high reliability organizations that consistently minimize adverse events despite carrying out intrinsically complex and hazardous activities. Because the healthcare industry involves high hazard for morbidity and mortality, it is considered to be a complex and crucially high-risk industry (Colla et al. 2005). Therefore, in the field of healthcare, safety culture acts as a component that reduces and prevents possible medication errors, eventually enhancing the overall quality of healthcare services provided to the service users and creating a patient safety culture (Ghobashi et al. 2014). Thus, patient safety is the delivery of care to the patients to prevent any probable harm by reducing errors and risks, and developing a culture of safety that comprises of the healthcare providers, organizations and patients (Mitchell 2008). The existence of a patient safety culture is an integral aspect of healthcare delivery, and the complexity of healthcare systems prompt continuous investigation and improvement of safety culture (Øvretveit 2009; Ghobashi et al. 2014).

Medical errors are a seemingly perverse problem and constant threat to public health. Errors resist intervention because, too often, the interventions deployed fail to address the fundamental source of errors due to a flaw in organizational safety culture. The increase in medication errors, such as the possibility of severe, often irreversible medical complications due to inappropriate drug therapy among practitioners and patients, has become a matter of global concern (Jia et al. 2014; Sivanandy et al. 2016), and as a result, are currently being discussed in a large number of national and international published medical articles (Webair et al. 2015). The pharmacists and their clinical services occupy an indispensable position in the healthcare system; they aim to ensure high levels of patient safety and reducing hospital costs related to medication errors (Jia et al. 2014). The medication errors committed by the pharmacists

across the healthcare system as a whole create a constant threat to the safety of patients (Bond et al. 2002). According to a study conducted by Kelly (2001), pharmacists could have prevented about 50% of the Adverse Drug Events (ADEs) reported. Further, Jia et al. (2014) maintain that as pharmacists continually strive to enhance safety and the quality of healthcare provided, there is an increasing recognition of the significance of establishing a culture of patient safety in the pharmacies; attaining such a culture requires recognizing the important beliefs and values of the organization, and the expected perceptions, attitudes, and behaviours about patient safety. This requires the implementation of protective measures, where health services are delivered efficiently (Ghobashi et al. 2014). The continuous need to assess the performance of hospital pharmacies requires internal modifications to evaluate the protective measures for efficiency alongside the development of new protocols through the incorporation of new knowledge (Carroll and Edmondson 2002).

The concept of organizational learning has been popularized with the augmentation of knowledge-based globalization, where the firms have professed the critical need to gain competitive advantage with enhanced performance in the market (Metz 2017). The existing literature has presented several connotations of organizational learning. It is a concept that facilitates the learning processes that direct, aid or obstruct organizational changes through the acquisition and distribution of knowledge – more specifically, the creation, recollection and transfer of knowledge (Ratnapalan and Uleryk 2014). Organizational learning can be seen as “learning-related processes such as knowledge acquisition, information distribution, information interpretation, and organizational memory” (Casey 2005: p.135). The system of organizational learning facilitates the learning activities of individuals, enhancing their development in terms of improved productivity and performance (Argyris 1977b); the development of the employees ultimately rectifies the errors occurring in an organization as it develops, transfers and utilizes essential competencies to accelerate its ability to adapt to dynamic and recurring changes (Senge 1990).

In the context of a hospital pharmacy, high-quality healthcare services are most crucial for achieving successful outcomes. This is achievable through the

performance and dedication of the healthcare providers (Huang and Li 2010). Thus, the assimilation of an improved patient safety culture, and the learning of clinical, non-clinical and administrative staff in a healthcare institute, which is of utmost importance, can be achieved through organizational learning (Raeissi et al. 2018). Consequently, with the recognition of hospital pharmacies as major drivers of patient safety, the need to develop the organizational culture into a more comprehensively-directed culture towards patient safety is essential.

### **1.1.1 Patient Safety Culture in Hospital Pharmacies in Kuwait**

Improving patient safety culture is increasingly perceived as a necessary approach to enhancing patient safety in the Arab world (Elmontsri et al. 2017). Kuwait provides an interesting context, given its multinational healthcare workforce: only one-third of doctors and 6.5% of the nursing staff in the country's six government hospitals are of Kuwaiti origin (Alqattan et al. 2018). One previous study has examined patient safety culture in Kuwaiti primary care settings (Ghobashi et al. 2014), while a second has examined this issue in the context of Kuwaiti secondary care settings (Alqattan et al. 2018). However, to the best of our knowledge, the research on patient safety culture in Kuwaiti pharmacy settings has received little attention.

Pharmacists in Kuwait are major providers of medication to the public. An important function in dispensing and counselling is to encourage proper use of medication and patient safety. The Kuwaiti inaugural patient safety solutions of 2010, such as Look-Alike, Sound-Alike Medication Name, Patient Identification, Communication During Patient Hand-Over, Control of Concentrated Electrolyte Solution, and Assuring Medication Accuracy at Transition in Care, were implemented in public hospitals and hospital pharmacies as a part of the hospital accreditation programme to prevent medication errors, minimize ADEs, and to improve the patient safety culture by continual monitoring (Alqattan et al. 2018). However, research has shown that healthcare units are facing serious issues in bringing about organizational change towards patient safety, specifically pertaining to the identification of clinical practices suitable for widespread adoption (Leape et al. 2002). Nevertheless, there is still confusion among

professionals as to whether the efforts must be directed towards medical injuries or errors (McNutt et al. 2002).

### **1.1.2 The Instruments of this Research**

The present research was adopted two instruments, learning organization survey short-form (LOS-27) and pharmacy survey on patient safety culture (PSOPSC). The LOS-27 was used to measure organizational learning, while the PSOPSC was used to measure pharmacy patient safety culture in hospital pharmacy settings.

The learning organization survey (LOS) was originally developed as a Harvard survey based on the ideas of Garvin *et al.* (2008) and included 55 items to assess collective learning in any organization. The LOS was then modified by Singer et al. (2012) into a short form with 27 items to become LOS-27, thereby optimizing its use in healthcare settings. This instrument offers an important tool for examining the relationship between organizational learning and patient outcomes, such as patient safety (Garvin et al. 2008).

The original PSOPSC was developed by the agency for healthcare research and quality (AHRQ) in 2012, following a pilot study that was designed to assess 11 dimensions of pharmacy with 36 items of patient safety culture (Westat R 2012). The PSOPSC was designed specifically for pharmacy staff and probed them on their views about the culture of patient safety in their pharmacies.

The two instruments were modified and translated into Arabic based upon scientific methodology. The way and logic of modification, methodology of translation and reasons of adopting the two instruments are explained in detail in chapter 7.

## **1.2 RESEARCH PROBLEM**

In the field of healthcare, the need for a patient safety culture is indispensable due to medication errors, administration errors and ADEs; all prevalent, costly, and clinically significant problems. It is estimated that around 770,000 people are affected or die in the hospitals in the United States each year from ADEs (Jia et al. 2014). The efforts to develop an improved patient safety culture has become a global concern, and hospital settings have undertaken remarkable transformations for the attainment of expected patient safety. However, despite

these attempts, healthcare of an optimal quality remains a distant goal. This is true especially in the case of hospital pharmacies that are in direct contact with the patients.

The demand for development, modification, and alteration in the healthcare industry has stimulated the development of a few instruments that enable the evaluation of the performance of healthcare organizations (Singer et al. 2012). Organizational learning is a concept adopted and followed by settings involving a large number of staff members and stakeholders held responsible for the successful functioning of the entire system. The inclusion of learning directs organizational changes, knowledge management and organizational adaptation that assist in the improvement of organizations. The same is applicable in the setting of hospital pharmacies (Firth-Cozens 2001).

The literature is replete with examples of successful quality and safety improvement initiatives and popular instruments in all types of hospitals and primary care settings (Vassalou 2001; Eisenlohr et al. 2002; Mohr 2005; Sorra and Dyer 2010; Halligan and Zecevic 2011; Westat R 2012; Singer and Vogus 2013). However, most examples are infrequently replicated, and few have focused on patient safety culture in pharmacy settings. Moreover, comprehending the attitudes of pharmacy staff pertaining to patient safety, medical errors and incident reporting is considered vital information that is indicative of the overall patient safety culture in hospital pharmacies (Lalor et al. 2015). In this regard, extensive acknowledgement has been given to open learning systems wherein incidents are widely reported and acted upon (Williams et al. 2013).

However, there is a lack of research that establishes the participants' association of common dimensions of organizational learning and patient safety culture paradigms and their application to prevent risks and reduce errors or injuries in hospital pharmacy settings. The existing literature indicates that the instrument adopted to reduce accidents and errors in hospitals requires integration with the organizational learning to become an organizational norm (Dowd 2000; Goh et al. 2013). Thus, the use of organizational learning at the system level necessitates modifications in organizational routines that navigate to various groups, professions, and hierarchical structure (Rivard et al. 2006).

In the context of patient safety culture in Kuwait, literature emphasizing the need for improvement in the patient safety culture with an acute focus on the organizational learning in the healthcare centres, especially hospital pharmacies, is scarce. The existing studies have paid little attention to the perceptions of organizational leaders, participants, or stakeholders in general about how organizational learning measures can be used to improve the patient safety culture in such settings (Øvretveit 2009).

Although the prevailing frameworks for improved safety at some hospital pharmacies are effective, there is a lack of frameworks that examine patient safety through the reflection of stakeholders' views on the specific private and public hospital pharmacy settings in Kuwait. Therefore, there is a dire need for research that comprehends the views of stakeholders pertaining to the specific application of organizational learning principles that support a patient safety culture (Ratnapalan and Uleryk 2014). Also, there is a lack of conceptual frameworks/models that contribute to organizational learning in a hospital pharmacy setting to promote and improve the patient safety culture.

Therefore, the current research presents a framework for determining the factors for the improvement of organizational learning. The framework can be applied to the current measures of embedding patient safety culture in hospital pharmacy settings; thus, the research aims to reduce the medical errors by making concerted efforts towards embedding patient safety culture into organizational learning.

### **1.3 RESEARCH NEEDS**

The current study aims to explore the relationship between organizational learning and patient safety culture in hospital pharmacy settings through the learning organization survey short-form (LOS-27) and pharmacy survey on patient safety culture (PSPOSC) instruments. This is because there is a need for improvement, change and adaptation in the healthcare industry due to the increase in medical errors. Likewise, it is necessary to identify appropriate ways to evaluate the performance of healthcare organizations in a way that permits evaluation of the change in the different elements within organizational learning

(Singer et al. 2015). There is a need for a reliable, valid, and brief organizational learning instrument that would assist in solving the learning problems and creating strategies to enhance learning capabilities, leading to organizational learning (Singer et al. 2012). Moreover, patient safety culture, or the improvements needed for the patient safety culture with intense focus on the dimensions of organizational learning in healthcare centres, especially hospital pharmacies in Kuwaiti healthcare organizations, is yet to be at the centre of studies (Ali et al. 2018; Alqattan et al. 2018). Further, the current studies merely highlight the importance of patient safety culture in hospitals, despite the significance of the hospital pharmacies.

Consequently, the pharmacies and their employees are unaware of their significant role in creating a patient safety culture; thus, there is a lack of emphasis on the definition and classification of events that affect a pharmacy's ability to learn from its experience. This requires an assessment of the opinions and perspectives of the staff in hospital pharmacies. However, although the pharmacy survey on patient safety culture (PSOPSC) has been developed to assess the opinions of pharmacy staff regarding the patient safety culture in their pharmacies, it is unavailable in Arabic. As the study is based on the hospital pharmacies in Kuwait, there is a need for research highlighting a reliable and valid Arabic version of an instrument that measures organizational learning and patient safety culture in hospital pharmacy settings. In addition, pharmacy staff are unaware of the techniques of organizational risk management or methods to explore potential or actual errors, suggesting the need for awareness and knowledge about patient safety culture.



## **1.4 AIMS AND OBJECTIVES**

### **1.4.1 Overall Aim**

The aim of this research is to assess the reliability and validity of an Arabic version of LOS-27 and the PSOPSC. The study is based on the evaluation of staff's perceptions and views about organizational learning and patient safety culture in public and private hospital pharmacies of Kuwait. Also, the aim is to explore the relationship between organizational learning and patient safety culture in hospital pharmacy settings as determined by the LOS-27 and PSOPSC questionnaires. Further, determining the relationship between the different dimensions of organizational learning and patient safety culture in hospital pharmacies is significant. Also, to assess if there are statistically significant differences between the private and the public hospital pharmacies.

### **1.4.2 Objectives**

The current research has the following objectives:

- to assess the reliability validity of a translated Arabic version of the LOS-27 and to use this to evaluate staff perceptions about the organizational learning process in public and private Kuwaiti hospital pharmacies;
- to assess the reliability validity of a translated Arabic language version of the PSOPSC released by the United States Agency for Healthcare Research and Quality (AHRQ) in 2012 and to use this to evaluate staff perceptions of patient safety culture in public and private Kuwaiti hospital pharmacies;
- to explore the relationship between organizational learning and patient safety in hospital pharmacy settings as determined by LOS-27 and PSOPSC instruments, and to further explore how the dimensions of organizational learning relate to the dimensions of pharmacy patient safety culture;
- to evaluate the strengths and weaknesses of patient safety culture in public and private hospital pharmacies and indicate the areas that need further improvement in both private and public hospital pharmacies in Kuwait.

The first objective was investigated in Study I, the second objective in Study II, the third objective in Study III and the fourth objective in Study II and III.

## **1.5 RESEARCH QUESTIONS**

In order to achieve the objectives previously presented, three research questions have been developed.

1. To what extent the translated Arabic version of the LOS-27 is a reliable and valid instrument to be used in the Arab context?
2. To what extent the translated Arabic version of the PSOPSC is a reliable and valid instrument to be used in the Arab context?
3. Does organizational learning influence patient safety culture in private and public hospital pharmacies in Kuwait, and which specific dimensions of organizational learning significantly influence which specific dimensions of pharmacy patient safety culture?

## **1.6 RESEARCH SIGNIFICANCE**

The current study will assist pharmacy staff in Kuwait by offering a safer environment for patients in Arabic pharmacies, recognizing not only the areas that require improvement but also the areas that are already effective. The study will enable Arabic hospital pharmacies staff to assess current levels of the organizational learning process, ultimately recognizing the measures essential to improve learning and advance the areas where they are already excelling. Moreover, the study will provide awareness about the need and growing importance of the organizational learning process in hospital pharmacy settings in the Arabic context. It will also help future researchers as it will create an Arabic version of LOS-27 and PSOPSC, which have yet to be created. The model can also be utilized by researchers as a basis to develop and test the surveys in several other languages.

The adaptation of both instruments for use in a Kuwait hospital pharmacy context is an important development for the assessment and improvement of organizational learning and pharmacy patient safety culture in Kuwait. This would bridge the gap by exploring the relationship between the dimensions of organizational learning and pharmacy patient safety culture, and ascertain the elements of organizational learning dimensions that drive the components of the pharmacy patient safety culture. This study will also help hospital pharmacies to

understand how organizational learning impacts safety culture in pharmacy settings.

This study will further assist researchers in adopting a similar methodology to test other variables in conjugation with patient safety to establish its relationship in other countries.

## 1.7 STRUCTURE IN THE THESIS

The thesis comprises of five parts: Introduction, theory, methodology, results and discussion of the three studies, and overall discussion and conclusions. These five parts follow a classical structure of academic work. Within each of the five parts, the topics have been divided into chapters. Table 1.1 outlines the five parts of the thesis, places the chapters accordingly, and presents the purpose of each part.

**Table 1.1: Outlining the Five Parts of the Thesis and Placing the Chapters Accordingly**

Part	Chapters	Purpose of the part is:
1- Introduction	1. Introduction	To introduce the practical and theoretical foundation for the research
2- Theory	2. Theories of Learning: Organizational Learning Approaches 3. Patient Safety Culture – Setting The Scene 4. Patient Safety Culture in Hospital Pharmacy Settings - Deep Immersion 5. Intersection Between Organizational Learning and Patient Safety Culture: Conceptual Framework	To clarify the theoretical ground for the empirical studies in six hospital pharmacies of Kuwait (three private and three public) To provide conceptual framework to this research
3- Method	6. Research Design 7. Research Methods	To create transparency of

		research done for this thesis
4- Results and Discussion of the Three Studies	8. Study I Validation of Arabic Version of LOS-27 and Perceptions of Pharmacy Staff about Organizational Learning Process 9. Study II Validation of Arabic Version of PSOPSC and Perceptions of Pharmacy Staff about Patient Safety Culture. 10. Study III The Relationship Between Organizational Learning and Patient Safety Culture in Hospital Pharmacy Settings	To present findings of the empirical studies and to discuss findings
5- Conclusion	11. Conclusions and Recommendations	To discuss overall findings and draw conclusions of the research questions and present contributions and limitations of research

Source: Devised by author

A brief description of each chapter follows:

**Chapter 1** presents the introduction and background to the topic of the research, the research problem, the need for the research, aims, objectives, research questions and significance of the research.

**Chapter 2** highlights the theories of learning: work-based learning, systemic view of learning procedures, the three prototypes of learning (single, double and triple loop of learning), individual learning, group learning, and organizational learning. The organizational learning presented is detailed in this chapter; this includes definitions, different models, dimensions and their impact on patient safety culture, and critical review of organizational learning.

**Chapter 3** focuses on the concept of culture, organizational culture, the link between culture and safety, and safety culture in the aviation and healthcare industries. This chapter then addresses the concept of patient safety culture in detail, including definitions and the need for a patient safety culture. Patient safety culture in different settings of healthcare (including primary care and hospital pharmacies), challenges and barriers of patient safety culture are presented in this chapter.

**Chapter 4** emphasizes the patient safety culture in hospital pharmacy settings followed by the need for such a culture. The role of pharmacy staff in ensuring patient safety culture is also discussed. The conclusions of this chapter include a thorough description of the measurement tools for patient safety culture, together with the chosen tool and all its dimensions.

**Chapter 5** presents the intersection of organizational learning and patient safety culture in hospital pharmacy settings, and a conceptual framework for the research.

**Chapter 6** reviews the research gap, in addition to the philosophical approach informing the methodology. Aims and objectives of this research study are presented, and specific research questions are presented. The research design and time dimension of research are outlined.

**Chapter 7** outlines the research method, which is based on a quantitative approach by using a questionnaire survey. Sampling, data collection process, and data analysis have been identified. Reliability and validity of research as well as ethical considerations are presented.

**Chapter 8** presents the findings and discussion of **Study I**, “validation of Arabic version of LOS-27 and perceptions of pharmacy staff about the organizational learning process”. It includes sample and response statistics, confirmatory factor analysis, inter-correlations among the survey composites, and the positive response rate of the survey.

**Chapter 9** presents the findings and discussion of **Study II**, “validation of an Arabic version of PSOPSC and perceptions of pharmacy staff about patient

safety culture". It includes sample and response statistics, confirmatory factor analysis, inter-correlations among the survey composites, and the positive response rate of the survey.

**Chapter 10** presents the findings and the discussion of **Study III**, "the relationship between organizational learning and patient safety culture in a hospital pharmacy setting". It includes measurement and inner complete model, multi-group analysis and measurement, and inner explorative model.

**Chapter 11** summarizes the findings of the three studies, presents the overall discussion of the study, and outlines the conclusions of the three studies and overall conclusions. It also summarizes the contributions of research, points out the limitations of the research, and suggests future research.

The thesis also includes the references used in collecting secondary data, and an appendix that consists of tools such as the questionnaires that were employed in gathering the primary data for the research.

## **PART TWO**

### **THEORY CHAPTERS**

#### **REVIEW OF THE LITERATURE**

The next four chapters elucidate a theoretical ground that assists in creating a patient safety culture. The key message is that the challenges within hospital pharmacies restrain organizational learning, which subsequently hinders problem-solving abilities to create a patient safety culture. This project highlights the relationship between organizational learning and patient safety culture and their dimensions to overcome the challenges faced by pharmacy staff in improving the safety culture. Subsequently, literature on theories of learning and organizational learning, the concept of patient safety culture, patient safety culture in hospital pharmacy settings, the intersection between the concepts in hospital pharmacy settings and the conceptual framework of this research will be presented.

*Chapter 2: Theories of learning: organizational learning approaches* describes the theoretical background of the learning theories by focusing on organizational learning approaches. The definitions, different models, dimensions of organizational learning and their impact on patient safety culture have been emphasized. This chapter introduces the concepts of work-based learning, a systemic view of learning procedures, and the three prototypes of learning: single, double, and triple loop of learning, before continuing to provide an overview of organizational learning in the healthcare sector.

*Chapter 3: Patient safety culture – setting the scene* describes the theoretical background of patient safety culture. The concept of culture, its significance in an organization, and association with safety culture is explained. The needs for a safety culture and safety culture in the healthcare industry are addressed. The chapter also presents a link between ‘safety culture’ and ‘patient’. Lastly, the barriers to patient safety culture as presented in the existing literature are outlined.

*Chapter 4: Patient safety culture in hospital pharmacy settings - deep Immersion* describes the various aspects associated with patient safety culture in hospital pharmacy settings. The chapter elaborates the concept of patient safety in pharmacy settings and the necessity for creating this culture. Further, the views of various authors on the need to have a patient safety culture and patient safety culture in different settings will be presented. Additionally, the role of pharmacy staff in ensuring patient safety culture will be discussed, together with a thorough description of the measurement tools for patient safety culture, and a description of the chosen tool and its dimensions.

*Chapter 5: The connection between organizational learning and patient safety culture in hospital pharmacy settings: conceptual framework* describes the theoretical and empirical literature addressing the relationship between organizational learning and patient safety culture in hospital pharmacy settings. The existing conceptual frameworks that address the relationship between organizational learning and patient safety culture will be presented to create the optimal conceptual framework for this thesis.



## **CHAPTER 2**

# **2 THEORIES OF LEARNING AND ORGANIZATIONAL LEARNING**

### **2.1 INTRODUCTION**

The previous chapter provided a brief introduction to the thesis. It also addressed the gaps in the existing literature, overall aim, objectives, research questions and structure of this thesis.

This chapter is the first episode of the literature review series. The current chapter aims to review the theoretical background of the learning theories by focusing on organizational learning. In this chapter, work-based learning and a systemic view of learning procedures, and the three prototypes of learning: single, double and triple loop of learning, will be introduced. In addition, individual, group and organizational learning are studied to ascertain the most appropriate form of learning for improvement. The chapter further discusses organizational learning in detail; this includes definitions, different models, dimensions and their impact on patient safety culture. The chapter then considers organizational learning in the healthcare industry, before concluding with a critical review of organizational learning, and a summary of the entire chapter.

### **2.2 WORK-BASED LEARNING**

Work-based learning illustrates combining explicit and tacit forms of theory and practice modes of learning for individual, collective and organizational learning (Raelin 1997). The superficial and simplified involvement of learners in work-based learning has been at the centre of several studies in recent years. Moreover, there is the potential for individuals to learn by existing in a knowledge-based and work-based environment (Chisholm et al. 2009). Work-based learning is different from school-based education since one has to learn through practical experiences in the workplace. Thistlethwaite et al. (2012) stated that work-based learning is an on-the-job activity, which includes teamwork, coaching, practical experience and mentoring by senior health professionals. Further, they added

that experience gathered while working is beneficial for healthcare professionals to elucidate and refine their careers.

The social competencies and personal skills acquired through work-based learning assist professionals in becoming more experienced; the close relationship between the actual work and the learning processes enhance skills, rendering the experience and the process of learning directly proportional (Manley et al. 2009). Melnyk and Fineout-Overholt (2011) are of the opinion that work-based learning is a vital method of acquiring soft skills, appropriate behaviour and competencies. Melnyk and Fineout-Overholt (2011) further emphasize the significance of work-based learning by arguing that, in addition to adopting certain skills, work-based learning also facilitates development of socialization among professionals in the workplace. Thistlethwaite et al. (2012) note that professionals can also enhance their self-efficacy, self-confidence and level of motivation while performing their work, and experts can develop career management and awareness skills. On the other hand, a lack of participation in the workplace may result in professionals' downward career-drift. Thistlethwaite et al. (2012) suggest the existence of a link between the work environment and the willingness of an individual to become engaged in training and education through work-based learning to enhance their careers. Correspondingly, professionals are engaged in thinking critically and creatively to determine appropriate solutions when obstacles arise in the workplace (Henderson et al. 2011).

According to Raelin (1997), work-based learning occurs on three levels: individual, collective and organizational. First, at the individual level, work-based learning begins with conceptualization, which provides practitioners with a way to challenge their assumptions about their practice. Medical practitioners share conceptual knowledge in a way that it becomes contextualized. Learning gained through experience – often referred to as implicit learning and is the basis of tacit knowledge – can be used to solve problems and make decisions in new situations (Raelin 1997). Thus, through work-based learning, an individual is provided with the opportunity to adopt the required skills through informal or formal interactions with the management, colleagues or patients, together with solving real-life complications. Learning oftentimes happens out of the experience. However, the

experience promotes the tacit knowledge acquired from the experimentation. Then, the reflection takes part in the ability of an individual to reveal and explicit what he has planned, observed or achieved in practice (Raelin 1997).

Second, at the collective or group level, conceptualization contributes to the achievement of automatic inquiry, similar to the individual level. Work-based learning at a collective level consists of four types of learning, need to be integrated to produce effective, efficient and critical learning. The four types are applied science which is the scientific method that can forward in the domain of learning and work, action learning which is the learning in the real world and solves real problems, communities of practice which is the people coming together not based on the formal membership or job descriptions, as by being engaged with one another in action and action science which is what consciousness does is take out the intuitive use of tools and skills for subsequent use. (Raelin 1997).

Third, at the organizational level, work-based learning provides a framework for organizations to take advantage of learning that is received intuitively from activities, by consciously organizing activities in a way that ensures learning is captured and shared for the benefit of individuals, groups and the organization as a whole (Longmore 2011). The systemic view of learning discussed in the next section focuses on the three types of learning as a part of the theory of learning: single, double and triple-loop learning.

### **2.3 SYSTEMIC VIEW OF LEARNING**

Raelin (2000) states that work-based learning occurs in three cycles:

- single-loop learning or first order of learning;
- second-loop learning or second order of learning; and
- triple-loop learning or third order of learning.

The theory on single and double loop learning by Argyris (1976) exemplifies a cognitive perspective towards work-based learning. According to Chiva et al. (2007), this perspective includes being involved with the process by which learning directs the detection and correction of errors within existing goals,

policies and values, or changes in those goals, policies and values. Single-, double- and triple-loop learning are part of learning theory and an important source of learning; these are discussed in the following sub-sections.

### **2.3.1 Single-Loop Learning (Following the Rules)**

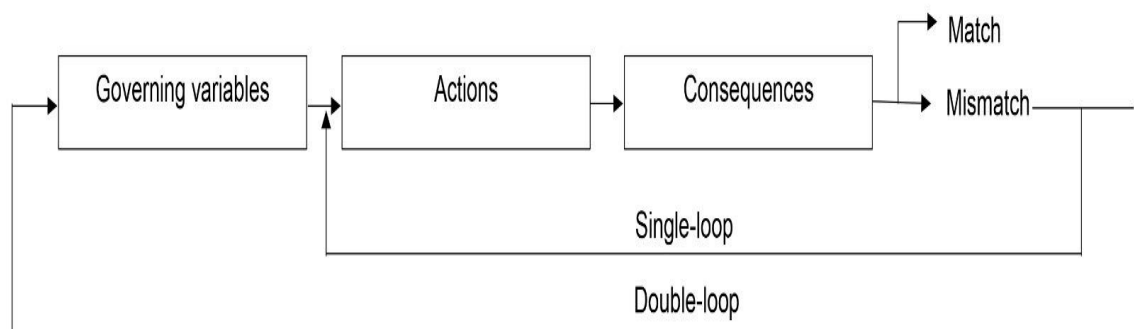
Argyris and Mlejnek (1991) contend that individuals working at some levels of professional development suffer from biases ingrained from an early age due to the educational emphasis placed on problem-solving, together with ignorance regarding what is not known, and therefore, may not be aware of more effective methods of learning. These prejudices create situations dominated by single-loop learning. Single-loop learning, or the first order of learning, includes a simple approach towards problem-solving, where singular questions are asked with the aim of soliciting a unidimensional answer. Argyris (1994) applies the example of a thermostat to explain the single-loop process. The thermostat acts as the current environmental temperature against a standard setting. The standard setting is used to determine whether the heating should be turned on or off. Therefore, the single-loop approach is grounded on the premise that the problems are solved by identifying the issue as a part of the cause-and-effect process, and the influences are referred to as the governing variables, with the solution based on resolving the issue and correcting the situation (Argyris and Mlejnek 1991). In the case where the feedback indicates recurrence of the problem, or occurrence of a new problem, the same process is used to identify the cause of the problem and recognize a solution to be implemented (Argyris and Mlejnek 1991).

Although the single-loop learning process is viewed as effective, it depicts the possibility of being highly constrained with no consideration of additional variables. The application of this process in situations where solutions do not work directs the creation of a repetitive cycle which offers a negative feedback each time. However, in some situations this system may appear effective, especially if the correcting course of action works; but still, the model deals only with the immediate issues (Argyris and Mlejnek 1991). Single-loop learning is most common in situations where goals are required to be fulfilled, often with an emphasis on the way techniques are used to increase efficiency (Usher and

Bryant 1989). In a case where a long-term approach is deliberated with the consideration of other variables, single-loop learning may impact the issue directly or indirectly, leading to the concept of double-loop learning. On the other hand, this process can be seen as Ideal type process.

### 2.3.2 Double-Loop Learning (Changing the Rules)

Double-loop learning is also labelled as Learning II, second-order learning or deutero-learning (Tosey et al. 2012). The shift to double-loop learning involves changing the mental maps that govern the process of single-loop thinking. Double-loop learning involves questioning the assumptions that are in place while assessing the direct variables (Argyris and Mlejnek 1991). In the case of the thermostat, the governing variable was the temperature; with single-loop learning, the temperature is the focus of the assessment and design of action, but with double-loop learning, there is a questioning of the assumptions associated with the temperature, such as whether or not (as per the assumption made), the set temperature is correct, or optimal (Argyris 1994). The framing of the problem and questions with reference to the issues and the influences are reconsidered with the double-loop learning model.



**Figure 2.1 Double-loop learning model**

Source: (Argyris 2001: p.61)

As evident in Figure 2.1, double-loop learning is an extension of the single-loop, occurring during the assessment of the problem or the results and evaluation of the potential strategies to deal with the issue. Double-loop learning has the potential to lead to more creative and long-term solutions that deal not only with the direct issues, but also the underlying factors instigating the problem (Argyris and Mlejnek 1991; Argyris 2001). The additional approaches that differentiate the

depth and scope of problem-solving include the concept of lower and upper level learning by Fiol and Lyles (1985), the concept of exploitation and exploration by Levinthal and March (1993), incremental and radical learning by Miner and Mezia (1996), and generative and adaptive learning by Senge (1990).

The development of double-loop learning can perhaps be argued as a required conscience and purposeful practice, with an awareness of the changes essential to expand an individual's frame of reference, and an increased level of reflexivity (Argyris and Mlejnek 1991). The double-loop learning model further evolves into a triple-loop model (Tosey et al. 2012), as discussed in the next sub-section.

### **2.3.3 Triple-Loop Learning (Learning about Learning)**

Triple-loop learning, or third order learning (also known as transformational learning), involves learning how to learn by reflecting on the ways individuals learn (Tosey et al. 2012). Again, Tosey et al. (2012) maintain that triple-loop learning is usually presented as supplementary to single-loop and double-loop learning, and at a metaphorically 'higher' or 'deeper' level than the preceding levels, implying that this level bears a greater importance and profundity. Triple-loop learning involves transcending ideas and patterns, and a shift is witnessed in comprehension of the context, perspective and the issues to alter the perspective, resulting in transformational change. Thus, it is necessary for individuals to reflect on their notions about the "rules" in addition to the modification of these rules (Flood and Romm 1998).

Moreover, triple-loop learning is an activity that varies between the imagination and rigour. The process includes the professional learning about the learning, thinking about the thinking, and sharing their perspectives based on others' perspectives, before taking decisions. Leifer and Steinert (2011) argue that triple-loop learning requires an understanding of the association between the problem and the solution, even though they are separated by time and space. Further, the process requires individuals to grasp the effect of their previous actions on the conditions that encouraged their current problems.

## **2.4 INDIVIDUAL, GROUP AND ORGANIZATIONAL LEARNING**

The additional types of learning levels include individual, group, and organizational learning. The three learning levels are discussed critically in this section, with emphasis on their link with single-, double-, and triple-loop learning.

### **2.4.1 Individual Learning**

Individual learning in the contemporary world is said to be derived from the theory of multiple intelligences (Davis K 2011). Gardner (1999) described eight types of intelligence: linguistic, body-kinaesthetic, spatial, logical-mathematical, musical, interpersonal, intrapersonal and naturalistic. A person can, at most, excel in three of them but can acquire all of them to some degree. (Schneider and Newman 2015) explain that intelligence is not something that is pre-set since birth. It is multidimensional and develops. Although individual learning seems like a part of behaviourism theory in that it is an individual who reacts to stimuli and learns accordingly, in practice, it has been found that constructivist theory holds more similarities with individual learning.

Individual learning is dependent upon the situation under which a learner assumes the responsibilities that they are required to undertake in order to carry out or evaluate the learning experiences in a healthcare centre (Grol et al. 2013). During this learning process, an individual takes ownership and responds to the situation. This can be linked with the systemic view of learning and work-based learning processes, as discussed earlier, as in both cases, an individual has to take the initiative to engage in the learning process by both gaining experiences from practical hands-on training, and by reviewing the treatment process of others (Greene et al. 2012). When an individual observes others and gains experience by undergoing practical training before treating patients, this is related to single-loop learning. After that, when an individual verifies the situation as per the knowledge gained to determine the applicable treatment, this can be linked with double-loop, or the second order of learning (Cook et al. 2011). When, in individual learning, professionals base a decision on the perspectives of others or previous research and then apply the new procedure, this is third order or triple-loop learning, considered in the systemic view of the learning process.

There is no agreed definition for individual learning as it assimilates various meanings within itself. According to Sinitisa (2000: p.17), individual learning can be defined as the

“capacity to build knowledge through individual reflection about external stimuli and sources, and through the personal re-elaboration of individual knowledge and experience in the light of interaction with other and the environment”.

Sessa and London (2015) consider learning on an individual level as something that manifests itself in the behaviour of the individual. Dixon (1999: p.12) on the other hand, describes it as “the process whereby knowledge is created through the transformation of experience”. In the context of the present research, individual learning transpires through an individual’s reflection on the external stimuli that they come across and personal contemplation about their knowledge of the environment (Chettri 2016). Merrill (2002: p.45) asserts that:

“.. the social context of a learning environment may provide support for its members, nevertheless the change in cognitive structure and the acquisition of knowledge and skill is an individual event”.

Antonacopoulou (2006) has given numerous views regarding the association of organizational learning with individual learning. She defines individual learning as the efforts of an individual to fit into an organization that is represented by their professional identity. This is due to the fact that “The interlocking contexts and the politics of learning reflect the institutional forces that transcend across levels and units of analysis, capturing the politics of embeddedness” (p.469). In this manner, the claim about organizational learning being a product of individual learning is refuted. This is because the learning process of an individual is not because they want to challenge the “status quo” but because it maintains and secures their current position. For Casey (2005), individual learning is all about interacting with the outside world on a daily basis. It is more a practice-based exercise.

Individual learning promotes self-discipline, helps to build self-confidence, is free from any undue peer pressure or competition, is compatible and accommodative of one’s own learning style and pattern, and, most significantly, it is beneficial for introverted people who are unable to work or express themselves in groups.



However, it does suffer from criticism on many grounds. Individual learning involves little to no interaction with peers or adults socially, which leads to a potential neglect of norms and values that, under the supervision of the whole group, would otherwise have been followed (Meyer 2010). Self-motivation becomes difficult as tasks lead to boredom. There is also a lack of creativity in thinking, as tasks are only considered through one perspective (Smolla et al. 2015). Elkjaer (2004) maintains that individual learning neglects the basis of the ontological dimension of learning, the issue of human existence, development, and socialization (coming to be) while focusing on the epistemological dimension getting to know about themselves and what it means to be part of the world (Easterby-Smith and Lyles 2011).

With such criticism, group learning seems preferable. The viability of group learning is discussed in the following sections.

#### **2.4.2 Group Learning**

Group learning is another learning approach that has gained momentum in recent years. This kind of learning includes the work being managed and planned with the help of a trainer or a facilitator, which ensures group success. The learning that is fostered within a group requires regular assessment and evaluation. The knowledge acquired while working in a group presents a multitude of meanings through different perspectives; this magnifies the extent of knowledge, allowing the development of creative thinking. The learners in this type of learning also attain skills such as problem-solving, interpersonal skills, presentation and communication skills, all of which are beneficial outside the learning environment (Barker et al. 2015). Armenth-Brothers (2015) advises that the facilitator also becomes important as they can choose the members of the group, keeping in mind their diversity and learning capabilities. The measured inclusion of members ensures a greater contribution from every member to the knowledge being acquired.

Group learning can also be associated with the single-loop, double-loop and triple-loop of systematic review learning procedures. In accordance with single-loop learning, an individual can work in a group comprising of leaders and other experienced colleagues from the medical field who are dealing with similar types

of patient issues (Thistlethwaite et al. 2012). This enables professionals to gain experience and learn new methods of medical treatment, which can be applied while taking care of a patient. Consequently, an improvement in professionals' communication and working skills in the medical field is evident. Conversely, Smith et al. (2011) mention that, in group-based work learning, professionals can apply the double-loop learning process. Double-loop learning incorporates asking questions grounded on the respective field of work, for which professionals can discuss possible solutions to an issue in the group and learn the right things (Green and Higgins 2005).

### **2.4.3 Organizational Learning**

A recent study has shown that inadequate learning processes may bring about misleading implications and ineffectiveness of organizational processes (Basten and Haamann 2018). The process of organizational learning can thus help to enhance skills and knowledge, providing real opportunities to identify better ways of working together (Carroll and Edmondson 2002). The emergence, the definitions of organizational learning, and the distinction between organizational learning and a learning organization are outlined in the next subsections.

#### **2.4.3.1 Emergence of Organizational Learning**

The concept of organizational learning and the development of theories has a strong foundation, which begins with the seminal work of Cangelosi and Dill (1965). They viewed organizational learning as a string of interactions between adaptation at the individual or subgroup level and adaptation at the organizational level. Adaptation happens as a product of interactions between three types of stress: discomfort stress, performance stress and disjunctive stress (Cangelosi and Dill (1965). The theorists guided the creation of a body of literature that supports the presumption that learning inherently improves performance outcomes (Fiol and Lyles 1985).

The concept of organizational learning expanded from this premise, with increasing support from researchers seeking to connect the progression of organizational knowledge to competitive advantage (Walczak 2008). Based on the existing literature, there are three methods of addressing organizational learning. The first illustrated the ways defensive practices prevented learning; for

instance, Argyris and Schön (1978) relied mainly on clinical case studies. The second, whose foundation was in the work of Cyert and James (1992), regarded learning as variations in the organization's practices, which affected the impending behaviour. Cyert and James (1992) relied primarily on the simulations to advance theory. The third examined how the characteristics of performance, such as errors or costs, transformed as a function of experience (Dutton et al. 1984). The study relied on archival field studies to approximate the rates of learning. Further, in the third millennium (referred to as the era of science), science and learning are no longer detected as a commercial gesture for managers or/and a trendy word, but as a constant development of leaning programmes at all levels: this has transformed to the profound concern of management. The managers in contemporary times attempt to achieve a constant development and production; they have discovered that financial sources and technology can no longer be relied on, rather improvement and development should be examined in humans' brains and thoughts (Saadat and Saadat 2016). For example, Campbell et al. (2019) asserted that the theory of a fixed and growth mind-set offers one reason for observed underachievement for students. Fixed mind-set beliefs are connected to behaviours that can lead to reduced learning and concealing a lack of understanding to keep the image of being 'smart'. The growth mind-set can lead to more learning, persistence after setbacks, show resilience and learn from and feel inspired by the success of others.

#### **2.4.3.2 Definitions of Organizational Learning**

Organizational learning has been linked to a range of academic disciplines (Dodgson 1993). Due to this, there has been no agreement on the definition of organizational learning thus far (Easterby-Smith and Lyles 2003; Mazutis and Slawinski 2008). Brandi and Elkjaer (2011) identify organizational learning through a social learning lens. They began with individual learning, before moving on to social learning with a particular focus on pragmatism. Forty years ago, Argyris (1977a: p.16) defined organizational learning as a "process of detecting and correcting error", which is consistent with Weinzimmer and Esken (2017) view of organizational learning that assists in recognizing a problem, puts in processes to fix it with regards to previous incidents, and efficiently learns from

the example. Organizational learning requires the ability to recognize its ability or disability to identify and correct errors. According to Raspin (2011: p.3), organizational learning also involves learning from failures; this is significant for organizations as most of them tend to conceal their failures to avoid “political fallouts”.

Organizations can be viewed as collectives made up of individuals that think and act and are therefore influenced by cognitive and emotional factors. Additionally, we can expect that learning in organizational collectives should be more meaningful than the learning that is accumulated by individuals in an organization (Argyris and Schön 1996). In the same manner, Elkjaer (2004) describes organizational learning in terms of an individual's acquisition, participation and experience in the learning process; therefore, the emphasis on individuals is recognizable. Also, Hodgkinson (2000: p.157) defines organizational learning as “the coming together of individuals to enable them to support and encourage one another's learning, which will in the long term be of benefit to the organization”. Hence, organizational learning also corresponds to the thoughts and theories regarding individual learning; the similarities range from ‘stimulus-response models’ to ‘information processing or knowledge creation perspectives’ (Brandi and Elkjaer 2011). In the other hand, Vince (2004) argues that there is a difference between recognizing organizational learning as the collective of individuals' learning in an organization, and organizational learning that takes into account the politics and emotions that impact on learning and organizing. Vince (2004: p. 68) defines organizational learning as "how social, political, emotional and relational processes are created, sustained and challenged through the interaction of learning and organizing". In the recent research of Collien (2018) asserts that power, micro-politics and emotional processes may hinder or enable learning processes.

Huber (1991: p.89) defines organizational learning in a different context, stating that it occurs when:

“an entity learns if, through its processing of information, the range of its potential behaviours is changed or an organization learns if any of these units acquires knowledge that it recognizes as potentially useful to the organization”.

Notably, this may be strongly associated with the concept of using information to acquire and use knowledge (Argyris and Schön 1978). Corresponding to Huysman (2002), neither of these concepts is limited to the utilization of information internal to the organization, or directly influenced by its environment, recognizing that it may also be drawn from elsewhere. A practical managerial perspective suggests that learning within an organization may be perceived as the utilization of information to create value and enhance the effectiveness of the organization by changing behaviour (Sadler-Smith et al. 2001).

Therefore, the general context of organizational learning indicates it as a process through which knowledge is transferred, retained and created in an organization. The experience gained by the organization assists in its functioning and development, and acquiring knowledge (Law and Chuah 2015). This aligns with Argote (2012) explanation of organizational learning as the procedure of creating, retaining or transferring knowledge in an organization. Also, Casey (2005: p.135) advocates that organizational learning includes “learning-related processes such as knowledge acquisition, information distribution, information interpretation, and organizational memory”. In this definition, Casey (2005) added one more process to the previous definition, which is “storing the information”, to make organizational learning a part of the daily routine.

On the other hand, learning is perceived as a factor that disrupts organizational norms and work to standardize systems to make everything regular and automatic (Weick 1991); thus, learning happens when the norms are changed. Organizational learning is, therefore, “the process of improving actions through better knowledge and understanding” (Fiol and Lyles 1985: p.805). Moreover, somehow all organizations experience the learning process consciously or unconsciously (Kim 1998).

Although discussions ensue as to whether organizational learning should be defined as a change in cognition which is the development of shared understanding and conceptual schemes among members of the organization or a change in behaviour which is emphasizes learning through direct engagement and adaptive action (Chia 2017). Researchers acknowledge that learning can be apparent in the fluctuations in beliefs or cognitions, and actions or behaviour

(Easterby-Smith et al. 2000). Therefore, most researchers agree with defining organizational learning as a change in the organization's learning, which happens as a function of experience (Argote et al. 2011). In this respect, organizational learning is a shared action and mind-set that includes the reflection of current processes and the revaluation of the competence of the processes within organizational structures, suggesting that knowledge should be entrenched in organizational systems (Raspin 2011). This mind-set of continuous learning in an organization will eventually result in the standardization of learning within an organization, which, in turn, will nurture a culture and custom of restructuring the organization to not only maximize an organization's growth and efficiency, but to affect the organization in the long run (Sun and Scott 2003). Popper and Lipshitz (2000) assert that organizations don't have a brain but have a cognitive system and memories. The learning of individuals becomes organizational when the acquired insights and skills produce changes in norms, processes and operating procedures within the organization. Chia (2017: p.115) argues that there is one more approach which is a "practice" can be added to the cognitive and behavioural approaches. The practice provides a "third way" of understanding how organizations are able to learn and respond to environmental circumstances without overly relying on conscious cognition. This research adopts the definition of Casey (2005: p.135) for organizational learning that includes "learning-related processes such as knowledge acquisition, information distribution, information interpretation, and organizational memory".

Definition of organizational learning leads us to explain and define organizational unlearning since the two concepts are closely linked (TSang 2008). Other researchers argue that unlearning is a prerequisite for organizational learning (Nguyen, 2017). While Foil and O'Connor (2017) argue that the learning and unlearning are integrated. TSang (2008: p.1436) defines the organizational unlearning as "discarding of old routines indicates an intentional process". Whereas Akgün et al. (2006:p. 75) define it as 'changes in beliefs and routines'. Therefore, to learn, firms must first unlearn (Starbuck 2017).

To understand the concept of organizational learning well, the distinction between this concept and a learning organization is outlined below.

#### **2.4.3.3 The Distinction between Organizational Learning and a Learning Organization**

The concept of 'organizational learning' must first be distinguished from 'learning organization'. As asserted by Ang and Joseph (1996), 'organizational learning' indicates a greater emphasis on the process or sequence of activities that an organization undertakes to discover and deal with learning in an organization. Therefore, learning organization seen as "an organization skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights (Garvin 1993: p. 80). Conversely, the concept of 'learning organization' caters to the unique structural characteristics of an organization which has the ability to learn, and is concerned with the changes in the behaviour of the organization (Sun and Scott 2003). This implies that the latter concept focuses on the attributes or structural dimensions rather than the actions. However, organizational learning is not easily categorized. In addition, organizational learning is seen as a descriptive strand to study the learning process, while a learning organization is seen as a prescriptive strand focused on building an organization that learns. Organizational learning deals with the question of how individuals in the organization learn, but a learning organization deals more with how to change the behaviour of the organization (Sun and Scott, 2003). Therefore, an organizational learning concept has been adopted.

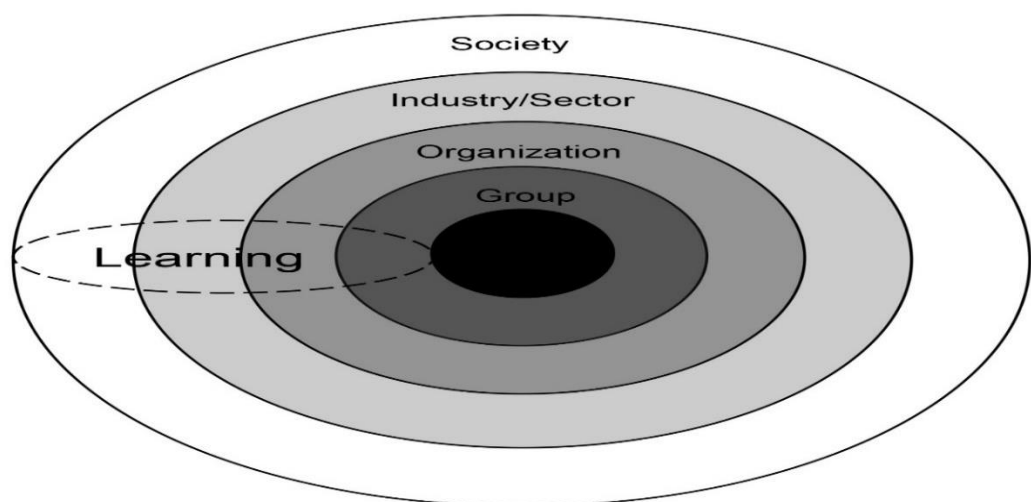
The subsequent sections attempt to understand the concept of organizational learning, its frameworks, methods that direct effective organizational learning, its dimensions, and barriers to effective organizational learning.

#### **2.4.3.4 Organizational Learning Models**

An organization is a machine that cannot function without cogs and gears; that is, the employees or individuals that are a part of it. Therefore, successful organizational learning depends on individuals. This necessitates an examination of the need of individual learning for organizational learning. Argyris (1977b) maintains that organizations learn through individuals acting as tools for them. To use a metaphor, it is like a relationship between the soup and the bowl, the soup does not shape the bowl, and the bowl does not change the material of the soup.

Thus, individual and organization can be studied each one separately without doing the complexity of the situation (Easterby-Smith and Lyles 2011).. In addition, individuals' learning activities are encouraged or suppressed by an ecological system of factors that may be called an organizational learning system. Researchers such as Hedberg (1981) equate organizational learning with individual learning, stating that as individuals develop their personalities, personal habits and beliefs over time, organizations develop their views and ideologies. This is contrasted by the argument that organizational learning can be comprehended in terms of the characteristics possessed and utilized by the organizations (Cook and Yanow 1993). The focus also shifts from individual to group level when it comes to the contribution towards the organizational learning process. The researchers have developed several models of organizational learning.

Antonacopoulou (2006) suggests that all the levels of learning are interconnected. The various levels of interaction between different learning processes are illustrated in Figure 2.2. She provides new evidence about the relationship between individual learning and organizational learning and highlights the multiple and interlocking context that define the process of learning in organizations, the politics of learning at work, the institutional identity of individual's learning.

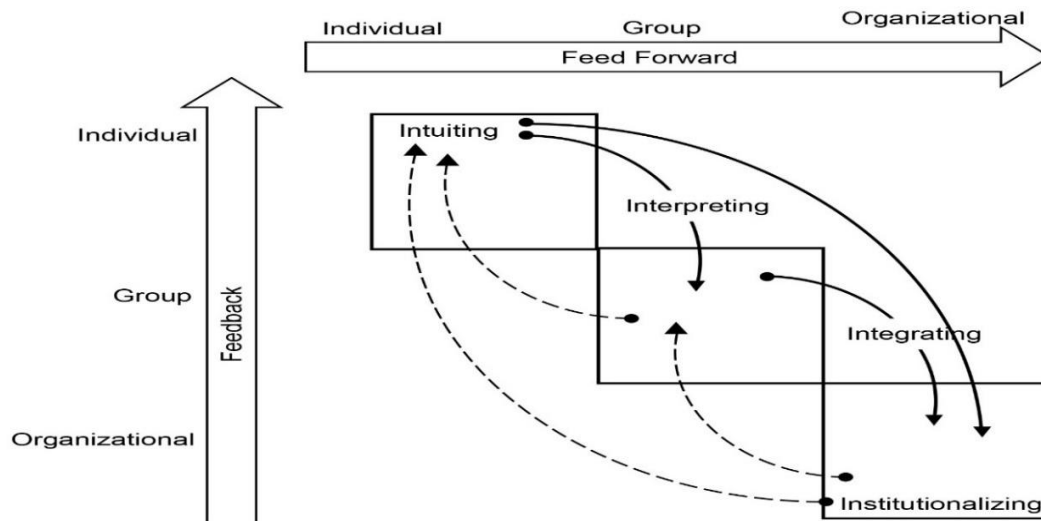


**Figure 2.2 Interaction between different learning processes**

Source: (Antonacopoulou 2006: p.457)



Crossan et al. (1999: p.524) developed the model of organizational learning on the basis of four processes: intuiting, interpreting, integrating and institutionalizing. Crossan et al. (1999) mentioned two methods, which range from the individual to the organization (feed forward) and from the organization to the individual (feedback); Figure 2.3 illustrates their framework:



**Figure 2.3 Crossan, Lane and White's model of organisational learning**

Source: (Crossan et al. 1999: p.532)

The framework illustrated in Figure 2.3 is based on four significant suppositions or assumptions, which are its foundation:

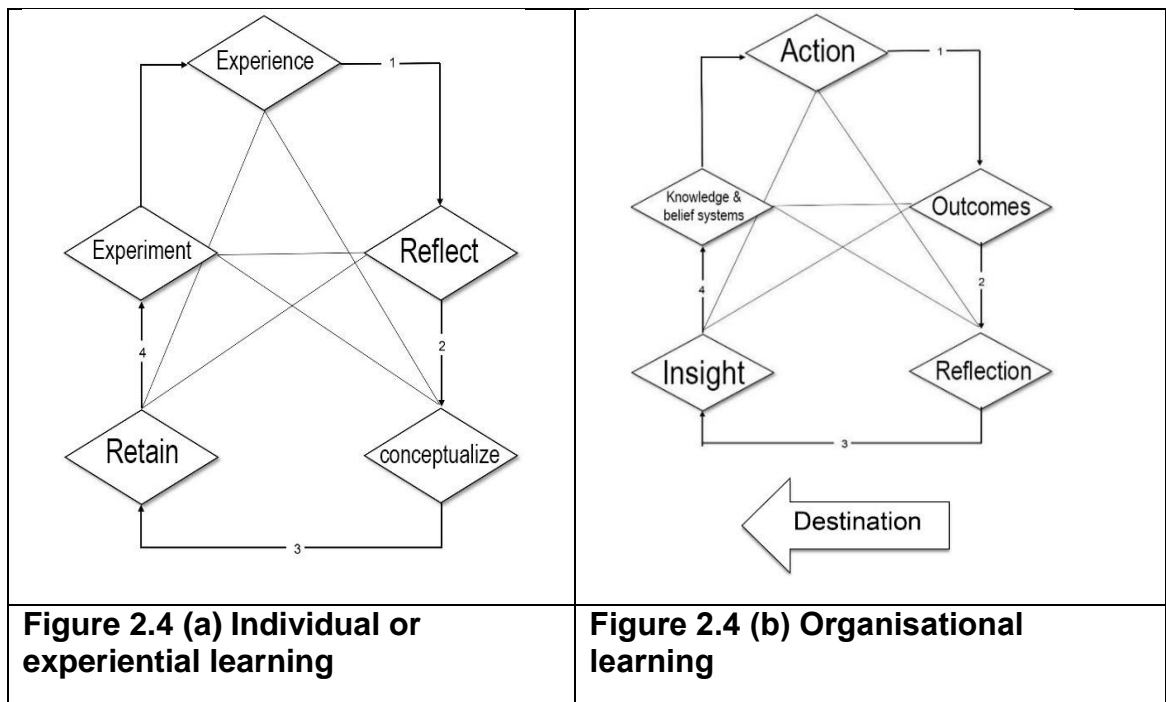
- 1- Organizational learning is built on the combination of exploration or gaining new information, and exploitation of the existing learning, as it is important to maintain a balance between the two. The tension, as Crossan et al. (1999) assert, exists in the feedforward and feedback processes of learning at the individual, group and organizational level;
- 2- Organizational learning works at three levels, namely, individual, group and the organization; it cannot work independently from each other;
- 3- The individual, group and organization levels are connected to the psychological and social processes, which include intuiting, interpreting, integrating, and institutionalizing, or what is referred to as 4Is;
- 4- Cognition and action are interdependent.

In the recent research, Brix (2019) also, asserts on the important of maintain balance between the explorative and exploitative activities by providing the employees with proficiencies and tools to switch between explorative and exploitative activities and by using learning-oriented feedback and feedforward between the management and the employees.

The model and its processes have been adapted in different ways by several researchers such as Crossan et al. (1999); Grant (1996); Kleysen and Dyck (2001); Lehesvitra (2004); Sabherwal and Becerra-Fernandez (2005) cited in (Wiseman 2007: p.1112). For instance, Kleysen and Dyck (2001: p.5) further extended the 4I model by adding “attending” as another process under “intuiting” to take the environment into consideration, which was missing in the parent model. Further, the researchers’ model also added two new variables, namely “championing” and “coalition-building”, in addition to interpreting and integrating respectively. The researcher found this appropriate given the need to include the influence of power and leadership in the model of the firm.

Casey (2005: p.137) proposed a new model based largely on Parson’s (1951) theory of action which “focuses on the learning of an organization as a social system and provides a view of organizational behaviour that explains how actors collectively engage in social actions related to learning”. The model concentrates on the system’s ability to adapt to its surroundings through performance and learning actions, which influence the collective culture and values of an organization. Hence, organizational learning is a combination of “actions, actors, symbols and processes that enables an organization to perform the transformation of information into valued knowledge” (p.139). This process directs a long-term adaptive capacity.

Popper and Lipshitz (2000) addressed the issue of blurring lines between organizational and individual learning. They compared two models to bring out the contrasts and similarities between them (Figure 2.4 a & Figure 2.4 b).

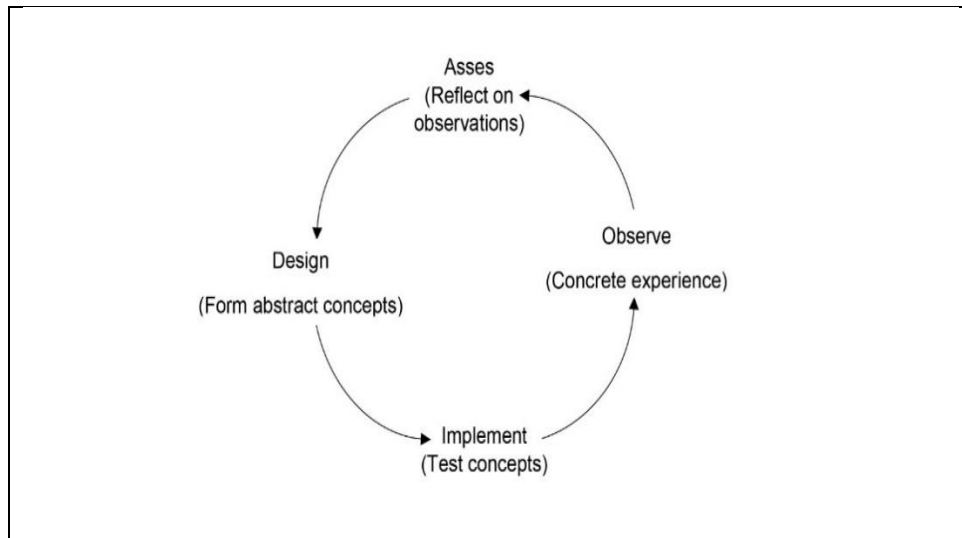


Source: (Popper and Lipshitz 2000: pp. 182-183)

The two models show that individual learning can serve, with small adjustments as a model of organizational learning. However, some conspicuous distinctions are also evident; for instance, dissemination which is left out of the shared star-shaped configuration in figure 2.4 (b). The presence of distinctions proves that, although these learning processes are similar, they cannot be completely equated with each other.

Nevertheless, the contribution of an individual cannot be emphasized enough. Hence, for the occurrence of organizational learning, individual learning is necessary. Learning at an individual level will ensure the success of an organization at the core level.

The importance of individual learning for organizational learning is obvious, in addition to being subtle (Kim 1997). Again, Kim (1997) emphasizes the role of memory in individual learning and further argues that individual learning occurs through four processes: observe, assess, design, and implement (OADI) (Figure 2.5). The four processes form the OADI cycle, which evolves into shared mental models (SMM); therefore, the approach to develop organizational learning may start with individuals by influencing their thinking processes and mental models, and the way in which they are shared.



**Figure 2.5 OADI model of individual learning**

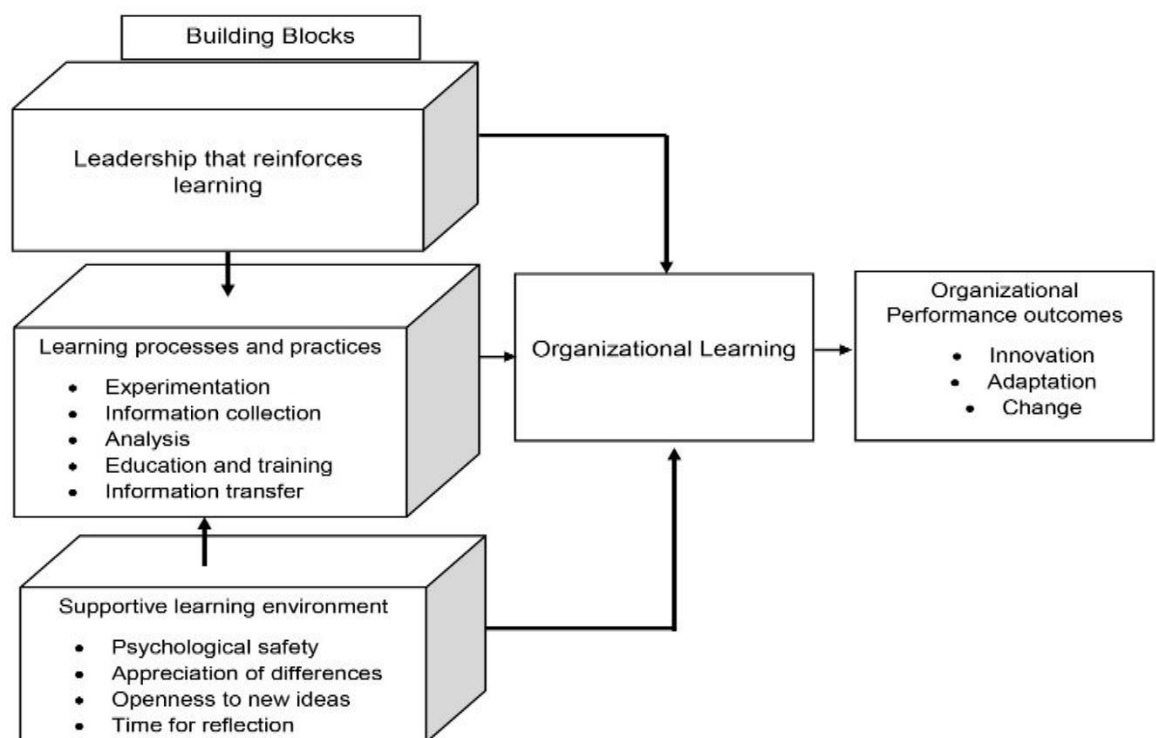
Source: (Kim 1997: p.38)

Popper and Lipshitz (2000) state the lack of solid evidence in the literature evaluating the application of the OADI-SMM model in organizations. The concept of learning organization, which is considered as one of the perspectives of organizational learning, has been addressed by Garvin (1993) differently, noting that there is a need for willingness to undertake experimentation. This suggests that learning can take place not only through systems, but also through experiences. Learning can ensue from experimentation, eventually allowing further improvements irrespective of results of the experiments. Garvin (1993) view of learning as the transformation of knowledge and the distinct modification of behaviours is in alignment with new information built on Senge (1990) systems theory functions with a new twist; Garvin (1993) observed the specific structures internal to the organization as a springboard for the organizational learning.

Garvin et al. (2008) argue that the creation of a learning organization requires three factors, known as the building blocks of the learning organization, that are essential for organizational learning and adaptability: a supportive learning environment, concrete learning processes and practices, and leadership behaviour that provides reinforcement. Although each building block is independent, measured separately and has subcomponents, it is crucial for each component to foster others as to some degree, the components overlap (Garvin et al. (2008). The three-building-blocks model, as shown in Figure 2.6, allows

companies to create and measure their learning proficiencies in detail and help to determine their functions as a learning organization or an organization that has the ability to learn.

As stated above, the three building blocks of organizational learning overlap and reinforce each other. As leadership behaviours assist in creating and sustaining supportive learning environments, they simplify the situation for managers and employees to accomplish distinct learning processes and practices effortlessly and competently. The concrete processes in the virtuous circle provide opportunities for leaders to perform in ways that foster learning and cultivate leadership behaviour in others. It is the idea of organizational learning that has been extended as an essential process within the context of the learning organization, as proposed by theorists such as Senge (1990).



**Figure 2.6 Conceptual model: Hypothesized relationships between learning and organizational performance outcomes**

Source: (Singer et al. 2012a: p.435)

This model has been modified by Singer et al. (2009a) to include seven dimensions considered as indicators of organizational learning: supportive

learning environment, leadership that reinforces learning, experimentation, training, information transfer, time for reflection, and information collection. These dimensions are used in this study to measure the concept of organizational learning in hospital pharmacy settings. The reasons behind adopting this model are that it was developed to be used in healthcare organizations, enables managers to evaluate current levels of support for organizational learning and thereby determine procedures necessary to improve it, and permits researchers to compare learning across organizations and constructs (Singer et al. 2012). In addition, the model offers an important tool for examining the relationship between organizational learning and patient outcomes, such as patient safety (Garvin et al. 2008).

#### **2.4.3.5 Dimensions of Organizational Learning**

Despite the vital need for invention, adaptation, and modification in healthcare, few devices permit practitioners to measure the extent to which healthcare facilities perform as learning organizations, or the effects of initiatives that require learning (Singer et al. 2012). Based on the modified model of Singer et al. (2012), the seven dimensions of organizational learning include, supportive learning environment, leadership that reinforces learning, experimentation, training, information transfer, time for reflection, and information collection. These dimensions are explained in detailed below.

##### **2.4.3.5.1 Supportive Learning Environment (SLE)**

Singer et al. (2012: p.439) defined a supportive learning environment as:

“the extent to which people feel safe to speak up and make mistakes, appreciate differences in opinions and ways of working, value new ideas and are thoughtful in decision making”.

Singer et al. (2015) argue that the promotion of organizational learning necessitates the devotion of careful attention to the environment in which learning is intended to happen. They maintain that a supportive learning environment is understood at three levels of analysis: team characteristics, organizational context of teams, and external environment. First, team characteristics are descriptions of workgroups that influence organizational learning. This includes psychological safety, appreciation of differences, openness to new ideas,

diversity, mental models, collective identification, social motivation, and team autonomy. Second, the organizational context of teams comprises the characteristics of the broader organization that influence organizational learning through the transitional impact on group's functioning. This comprises of learning resources, time for reflection, incentives, organizational culture, organization strategy, and organization structure. Third, the external environment includes factors that affect the healthcare sector, such as institutional pressures, environmental dynamism and competitiveness, and learning collaborations.

As mentioned above, the three levels of supportive learning, which are environment team characteristics, organizational context of teams, and external environment, enhance the safety and quality of care. Edmondson et al. (2001) found that freedom from pain with speaking up, further discussion, and seeking the opinions of others improve safety and increase the quality of care. Choo et al. (2007) argue that psychological safety positively affects the quality and safety improvement by increasing the production of ideas and enhanced problem solving.

Sujan et al. (2016) propose that there are many studies that document barriers to improve the safety culture in health-care. Such barriers include, for example, fear of blame and repercussions, and inability to understand the problems about what constitutes an adverse event. Therefore, Singer et al. (2015) very clearly confirm that the role of management and leadership is substantial for promoting a supportive learning environment and implementing learning processes in the context of quality and safety enhancement.

#### **2.4.3.5.2 Management that Reinforces Learning (MRL)**

Senge (1990) argues that, in terms of organizational learning, leadership is the role of leaders to take accountability for learning as a guide of ideas, designer of the learning process and steward of the vision, and a teacher by fostering learning throughout the organization. Therefore, leadership bears the ability to impact learning directly by influencing the learning processes and practices, and indirectly by developing a supportive learning environment for staff. Further, leaders are crucial to provide the guidance and direction necessary to directly support and sustain learning, especially in the complex world of healthcare with

pre-existing practices (Singer et al. 2015). Organizational learning comes from organizational settings characterized by costly potential errors and strong leadership commitment to learning (Popper and Lipshitz 2000). Therefore, Goh (1998) argues that building blocks of any learning organization requires skilled leaders and managers able to provide useful feedback to their employees, and to identify problems and opportunities, while being willing to accept and learn from criticism without being overly defensive. In a recent study, Pasamar et al. (2019) assert that leaders encourage organizational learning. Specifically, they found transformational and transactional leaders promote exploration learning and exploitation learning.

Regarding the impact of leadership and management on the patient safety culture, Mohr (2005) argues that leadership is a crucial theme in improving patient safety, and the integral part of a safety culture. Therefore, leading an organization that is committed to providing a culture of safety requires overcoming common pitfalls when thinking about errors, such as blaming the individual and blaming the organization's bureaucracy. Gutberg and Berta (2017) assert that it is not only leaders in healthcare organizations that play a key role in improving a patient safety culture, but that the middle managers can capitalize on their unique position between upper and lower levels in the organization. They can participate in improving patient safety culture through both explorative and exploitative activities that are a part of organizational learning theory.

Mohr (2005) again maintains that leadership for patient safety culture depends on proactive or double-loop learning, where medication errors are seen as an opportunity to enhance organizational learning; this confirms the strong connection between patient safety culture and organizational learning. Moreover, management approaches that reinforce learning create two beneficial effects, namely learning and motivation (Khatri et al. 2009).

#### **2.4.3.5.3 Experimentation (EXP)**

Garvin (1993: p.5) asserts that experimentation is one of the five activities that form organizational learning and defines the experimentation as “the activity that involves the systematic search for and testing new knowledge”. Experimentation denotes the extent to which individual matures and investigates new ways of



performing actions (Singer et al. 2012). It is necessary to ease the finances spent on growth of healthcare and further unlock innovation in delivery healthcare services (Macdonnell and Darzi 2013). The investigation of new ways of doing things in workgroups requires taking risks, however, as human lives are at stake, healthcare professionals may experiment less in comparison to lower risk settings. That being said, safe methods of experimentation, such as through simulated trials of new services and work processes, would promote learning and care delivery (Singer et al. 2015), enabling the same growth in knowledge. Rivard et al. (2013) maintain that experimenting with new approaches promotes learning by evaluating and refining an organization's overall approach to quality improvement for patient safety. However, experimentation may not lead to improvement if local learning is not successfully disseminated (Singer et al. 2015).

#### **2.4.3.5.4 Training (TRN)**

Training is applicable to both new and experienced employees. Therefore, the process of training concentrates on acquiring individual skills to grow workforce capabilities that are significant for collective learning (Singer et al. 2015). Goh (1998) emphasizes the role of organizational design and employee training to accomplish the requirement of organizational learning. Based on the empirical study conducted by Vidal-Salazar et al. (2012), the results demonstrated that there is a positive relationship between organizational learning, innovation and environmental training. However, it is important to recognize that different training components will likely affect different dimensions of organizational learning. Hence, adopting a broad approach to training is a logical route.

Supplemental training beyond the specialized training that healthcare professionals undertake before becoming eligible to practice their occupation is often measured as vital to develop workforce capabilities (Kaplan et al. 2010). Worsley et al. (2016) maintain that developing skills and training in managing healthcare organizations leads to a sustained change in quality and safety projects; desirable skills in a flexible, modern healthcare professional. In addition, human factor training can reduce the potential for errors and allow clinical staff to focus directly on improving patient care. Thomas and Galla (2012) assert that building a culture of safety is directly correlated with team training meaning the

importance of training in healthcare professionals is that it directs everyone to the correct course of action each time, reducing the possibility of mistakes, and allowing clinical staff to focus directly on improving patient care (Worsley et al. 2016).

#### **2.4.3.5.5 Information Transfer (INT)**

Information transfer, or knowledge acquisition, is a method for procuring and communicating information in an organization (Singer et al. 2012). Internal knowledge accumulation is contingent on individual, social, and structural factors. Further, an individual's intellectual requests and learning-orientation affect the extent to which others acquire knowledge. The acquisition of knowledge from individuals and entities outside an organization results in organizational learning (Singer et al. 2015). In order to achieve organizational learning, knowledge must be spread quickly and efficiently throughout the organization through a variety of mechanisms (Garvin 1993). Goh (1998) argues that organizational learning cannot be achieved without the transfer of knowledge across organizational boundaries within a specific system that allows them to occur. The results of a recent study conducted by Gaureanu et al. (2018) demonstrated that knowledge acquisition and structuring about organizational safety culture can further the elaboration and implementation of appropriate preventive-corrective measures in the organization. On the other hand, Wu (2018) argues that incomplete information transfer leads to misunderstanding and prevents the establishment of shared mental models, which may hinder the improvement of patient safety.

#### **2.4.3.5.6 Time for Reflection (TFR)**

Singer et al. (2012: p.442) define the time for reflection as "the extent to which people find time to review the work and invest time in improvement rather than focusing only on production". Deliberate reflection is essential to sustain the proactive and creative ways of solving problems. As the pressure of time and scarce resources influence the continued use of a sub-optimal process by limiting searches for better alternatives, time for reflection allows groups to consider the lessons learnt, and to further apply those lessons to new problems (Singer et al. 2015). Time pressure and workload increase the potential of error and explains the failure of nurses to commit to safety indicators (Rogers et al. 2004; Teng et al. 2010).

#### 2.4.3.5.7 Information Collection (INC)

Garvin et al. (2008: p.5) explain information collection as “systematically gathering the information from experts and own experience to keep track of competitor, customers and technological trends”. The monitoring and comparing of an organization’s performance include learning to improve quality through a disciplined approach of studying and interpreting data, including comparisons with competitors, and technological tendencies. Further, learning to function as an extremely dependable organization necessitates incorporating multiple sources and interpretations of data across several levels of analysis (Singer et al. 2015). Table 2.1 summarizes the definitions of the seven organizational learning dimensions.

**Table 2.1 Definitions of Organizational Learning Dimensions**

NO.	Organizational Learning composite	Definition The extent to which...
1-	Supportive learning environment	The people feel safe to speak up and make mistakes, appreciate differences in opinions and ways of working, value new ideas, and are thoughtful in decision making
2-	Time for reflection	People find time to review the work and invest time in improvement rather than focusing only on production
3-	Management that reinforces learning	Managers lead organizational learning by listening, seeking input, and providing forums and resources that promote dialogue
4-	Experimentation	An organization develops and tests new ways of doing things
5-	Training	An organization focuses on skill development in both new and experienced employees
6-	Information transfer	The information can be shared in a systematic and clearly defined way among individuals, groups or the whole organization
7-	Information collection	Systematically gathering the information from experts and own experience to keep track of competitor, customers and technological trends.

Source: Devised by author

The applicability of organizational learning in the healthcare industry is discussed in the next section.

#### **2.4.3.6 Organizational Learning in the Healthcare Industry**

As discussed above, the process of learning is achievable by attaining new facts and information, acquiring new procedures, processes, or skills, or establishing new routines and knowledge of action-outcome relationships (Argote 2013). To adapt to the changing, hazardous, and complex organizational landscape, to absorb the increasing quantities of clinical information, and to continuously improve delivery systems' policies and processes, healthcare organizations must begin to be "learning organizations" (Carroll and Edmondson 2002).

The constantly evolving healthcare industry that continues to be challenged with patient safety issues also requires incorporation of the process of learning. Learning in healthcare is vital as an ongoing function that happens via both formal and informal means to produce the best outcomes for the organization and the patients (Ratnapalan and Uleryk 2014). The healthcare facilities in the present times, which are typically more complex than earlier times, have levels of precautions in place that protect patients. The departments in hospitals are often allotted individual responsibilities for creating a patient safety culture such as medication administration, infection control, patient falls, fire safety, diagnostic machines and patient equipment. However, a certain redundancy follows this circumstance. The responsibility for the improvement of patient safety falls majorly on the management (Wakefield et al. 2001); thus, there is a need for organizational learning and establishing the mechanisms through which medical errors might be reduced.

Again, Carroll and Edmondson (2002) indicate that healthcare organizations are proficient in adopting local learning practices as well as techniques, but healthcare-related practitioners are found to be reluctant in following standards and guidelines at the organizational level. A typical healthcare setting aims at improvement in healthcare and patient well-being, achieving lower costs with high levels of quality staff, training the resident medical personnel, and obtaining increased research grants and growing their reputation. Such goals are targeted

through the systems of delivery of care to patients, billing, personnel hiring and building maintenance.

Healthcare structures and their functioning have been seen to have incorporated various forms of organizational learning mechanisms that have significantly contributed towards the sector's overall growth and value creation. As claimed by Wenger (2009), communities of practice have particularly been recognized as the preferred tool for creating knowledge and improving practices in the healthcare industry. Such mechanisms in place have been associated with the promotion of standardization of practice, and innovate and create breakthrough ideas, knowledge, and practices in such organizations (Anand et al. 2007).

#### **2.4.3.7 Critical Review to Organizational Learning**

Having reviewed the literature on the organizational learning in this chapter we now move on to offering a critique of the concept.

The problems with the concept of organizational learning require emphasis to avoid hindrance in the acquisition of knowledge, conduct of research, development of theories, and in the conceptualizing of knowledge. (Easterby-Smith 1997; Popper and Lipshitz 2000; Berson et al. 2015) argue the tendency within literature to equate learning with improvement, growth or wisdom; this could be true for organizational knowledge. However, learning does not necessarily result in positive outcomes, as is evident when organizational learning is addressed as a process or sequence of activities instead of an outcome.

Popper and Lipshitz (2000) further explain that disputes are mainly concerned with the similarities and differences between an individual and organizational learning, the different positions for each learning, and the conditions that promote the effectiveness of organizational learning. The feasibility of organizational learning is directly connected with factors such as a high level of environmental uncertainty, costly potential errors, high level of professionalism, and strong leadership commitment to learning. Accordingly, the lack of these factors in establishing organizational learning will result in failure. Another problem occurs when individuals become preoccupied with short-term goals;

they ultimately lose sight of the bigger picture or collective goal of an organization (Easterby-Smith 1997; Berson et al. 2015). The gradual changes that take place in organizational learning make it difficult to implement anything new as perceiving the changes also becomes slow. In organizational learning, as with constructivist theory, there is an over-reliance on previous experience, which does not allow any new ideas to develop.

Senge (1990) argues that one of the most prominent learning problems is 'delusion of learning from experience'. He maintains that the essential learning problem is because of individuals not immediately experiencing the consequences of significant decisions since the results take time to be clear.

Yanow (2000) argue that organizational learning is elusive or ideal type. Hughes (1958) maintain that the ideal type is a utopia created by the one-sided confirmation of one or more points of view. Moreover, it has a conceptual uniqueness that cannot be found empirically anywhere in reality. In the recent paper, Pedler and Hsu (2019) critically review the literature of organizational learning and organizational learning, they argue that the ideas of organizational learning and organizational learning have not fulfilled what was expected. The results up to now are less than the much original aim. As a result, the authors portray a possible picture of a new paradigm for organizational learning.

The metaphor is an allegorical similarity between the matter under study and another concept or entity (Hammersley and Atkinson 2005). The metaphor or organizational learning is not new, it has attracted attention at least since Chandler (1962) (Blackler 2004, p.340). The overstated use of metaphors lead to criticize the organizational learning concept. Such as, what does it mean that an organization learns? Are organizations entities capable of learning (Jones 1995: p.61), or are we simply talking about organizational learning as a metaphor derived from our understanding of individual learning? (Kim 1993: p.37). In addition, there are some "organizational" concepts, such as organizational knowledge and organizational memory, are presently receiving significant attention. However, it is not clear whether these explain elements of a unified cognitive model of organization or whether they are independent of one another (Jones 1995). Also, the definitions of unlearning was criticised by Visser (2017) because these definitions contain negatives, which is not really

feasible or possible in behaviour and thinking, “unlike machines or computers, people do not have a ‘delete’ or ‘off’ button, unless in cases of brain pathology or death, respectively” (Visser 2017: p. 50).

## **2.5 CHAPTER SUMMARY**

The current chapter discussed various learning theories and approaches and their applicability to the healthcare setting, together with their advantages and disadvantages. In this chapter, work-based learning and systemic view of learning procedures and the three different models (single, double and triple-loop learning) were discussed. In addition, the individual, group and organizational learning were studied to ascertain the most appropriate form of learning for improvement. The main focus of this chapter was on the concept of organizational learning and its definitions, emergence and foundation, the differences between organizational learning and a learning organization, different models of organizational learning, and the seven dimensions of organizational learning and their impact on patient safety culture. The chapter concluded with the critical review of organizational learning. The next chapter discusses patient safety culture.

## **CHAPTER 3**

### **3 PATIENT SAFETY CULTURE – SETTING THE SCENE**

#### **3.1 INTRODUCTION**

Martins and Martins (2003: p.380) established that organizational culture may be defined as “a system of shared meaning held by members, distinguishing the organization from other organizations”. With respect to the above definition, Arnold et al. (2005) stated that “organizational culture is the distinctive norms, beliefs, principles and ways of behaving that combine to give each organisation its distinct character”. These two definitions bring forward the fact that organizational culture differentiates one organization from another organization. Safety culture is one aspect of organizational culture (Pierre 2013). Enhancing organizational safety culture in hospitals could improve patient safety (Ashcroft et al. 2005; Hartmann et al. 2009). Patient safety is an increasing concern among healthcare professionals and the public (Goh et al. 2013), indicated by the volume of articles examining safety issues and improvements (Nieva and Sorra 2003). This includes organizational culture, communication failures, workers’ ability to understand the causes of preventable incidences, and the ability to view these as opportunities for learning (Hellings et al. 2007).

The previous chapter attempted to review the theories of learning by focusing on the concept of organizational learning. The various models, dimensions and contemporary approaches of organizational learning have been discussed in detail.

This chapter is the second episode of the literature review series. The current chapter aims to review the theoretical background of patient safety culture. It therefore addresses the three words, patient, safety and culture in detail, and links them to form an integrated concept on ‘patient safety culture’. The chapter starts with a detailed discussion of the concept of culture, its development and culture related to the organization. It goes on to discuss how organisational culture is linked to safety to create safety culture. Within this domain, the



distinction between safety climate and safety culture, and how safety culture differs from industry to industry will be addressed.

Finally, the 'patient' will be linked to the safety culture to form an integrated concept 'patient safety culture'. The concept of patient safety culture will be explained in a detailed section outlining the views of various authors on the need to have a patient safety culture. Another relevant variable in patient safety culture, i.e. risk management, will be studied. Also, how patient safety culture differs from a primary care setting to a hospital pharmacy setting will be discussed. The chapter will be concluded by outlining various barriers to patient safety culture as presented in the existing literature, as well as a summary of the entire chapter.

## **3.2 THE CONCEPT OF CULTURE**

This section addresses the definition of culture, development of culture, and organizational culture.

### **3.2.1 Definition of Culture**

Culture is essential for a human being to be able to live, to understand their environment, and to work with others (Guldenmund 2014). Understanding culture is significant because of its strong impact on human behaviour (Kim Jean Lee and Yu 2004). Although there are many definitions of culture and they often differ in their wording, culture is a difficult term to define. Spencer-Oatey and Franklin (2012) argue that the term 'culture' generally has been used in three ways. It refers to specific intellectual or artistic endeavours, what today we might call 'high culture', which is different from 'popular culture'. By this definition, it means that only a part of any social group 'has' culture.

Second, culture is described as a trait possessed by all people in all social groups, who nevertheless could be organized on a development continuum from 'savagery' through 'barbarism' to 'civilization'. The third usage of culture has been developed in an anthropological context and refers to the uniqueness of varied cultures of different peoples or societies. Hofstede (2001: p.9) defined culture briefly as "the collective programming of the mind, which distinguishes the members of one group or category of people from another" and considers culture

as a 'mental software'. Spradley and McCurdy (1980: p.5) defined culture as "the acquired knowledge people use to interpret experience and generate behaviour". Guldenmund (2014: p.17) combined the two definitions in one, stating that: "Culture is the acquired and collective knowledge groups or categories of people which is used to interpret experience and generate behaviour, which distinguishes them from other groups or categories of people", while Matsumoto and Juang (2016: p.16) defined culture as "the set of attitudes, values, beliefs, and behaviours shared by a group of people, but different for each individual, communicated from one generation to the next".

Culture is the normative and social glue that holds an organization together. Additionally, it explains the social ideals and values together with the organizational beliefs that the members share (Guldenmund 2000). With respect to the hospital environment, the theory of culture has been most appropriately described as being related to how people act, react, and create a balance between patient care and other motives, such as economic interests, innovation, and efficacy (Pierre 2013).

Having discussed the concept of culture, we will now proceed to the description of how culture is developed within an organization, and a discussion of organizational culture and its determinants.

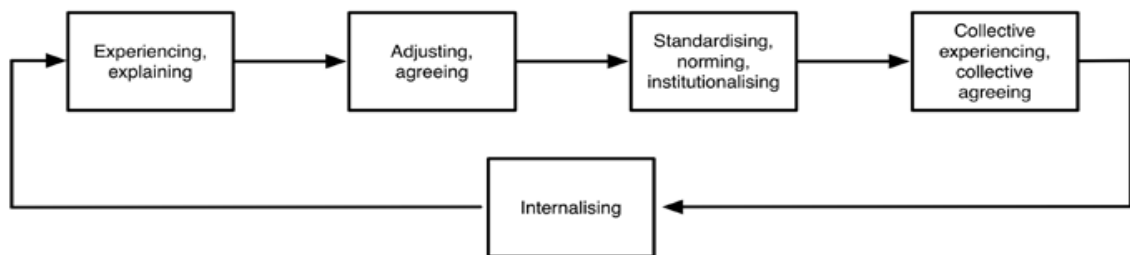
### **3.2.2 Development of Culture**

Guldenmund (2014) maintains that not all experience leads to knowledge and that not all knowledge leads to culture. Culture enables the development of a sense of continuity, order, and commitment that penetrates every component of the organization, from employee interactions to customer perceptions. It is often difficult for an organization to articulate culture effectively, but its influence is far-reaching: it impacts management, products, processes, employee attraction and retention, reputation, productivity, and, ultimately, the bottom line (Schein 1983).

Today, the business environment is highly competitive and dynamic. As a result, providing quality products and services that satisfy customers is crucial for securing long-term organizational success. Consequently, developing and maintaining a 'quality culture' is essential for ensuring an uninterrupted flow of

quality products and services (Malhi 2013). As established by Schein (2009), organizational culture is primarily rooted in three sources: (1) the founder's opinions and values; (2) group members' learning experiences as their organization gradually evolves; and (3) new values, beliefs, and assumptions with which new members and leaders enter the organization. Organizational culture is also dependent on the industry and business environment, as well as the national culture, and these have a role to play in cultural development (Kreitner 2007).

Many researchers in this field consider culture as something made up of a core and surrounded by one or more layers (Hofstede 2001; Schein 2009; Spencer-Oatey and Franklin 2012). Hofstede (2001) argues that there are three layers: symbols that act as the most superficial; values as the deepest aspect of culture; and the heroes and rituals in between. Guldenmund (2014) states that cultural layers exist at different levels: the national level, which is associated with the nation as a whole; the regional level, which is associated with ethnic, linguistic, or religious differences that exist within a nation; the social class level, which is associated with educational opportunities and differences in occupation; and the organizational level, which is associated with the specific culture of an organization and determines the type of culture in an organization, as is explained in the following section. A model developed by Berger and Luckmann (1966), as shown in Figure 3.1, presents the process of the formation of organizational culture and its internalization with time. It has been presented as follows:



**Figure 3.1 A model of organizational culture formation**

*Source:* Berger and Luckman, 1996

The first stage, presented within the first box, is representative of the situation in which group members find themselves when they are trying to contemplate their experiences. Individual perceptions of safety and risk will partially define an

individual's behaviour, e.g. what is safe and risky behaviour. The outcome of this process is an individual's perception of reality. This particular understanding is carried forward into the second box; the process of interaction within group members. This interaction often relies on communication, i.e. dialogue, discussion, correction, and results in mutual adjustments, agreements, and different expectations of each other's behaviours. The result of this box is based on shared understandings, for instance, standards of conduct, rules, and norms. In the third phase, the formal processing of rules and norms has been portrayed, i.e. the establishing of norms and institutionalization of behaviour and expectations. The fourth phase depicts the situation in which norms, standards, and expectations are accepted, to the degree that they are deemed to be the 'best' or, perhaps, the 'only' way of method of conduct. Members of the group share a similar understanding of reality, at least concerning the part of reality on which the group acts. Such an understanding is internalized by the group members, and they develop the 'basic assumptions' with which individuals within the group perceive reality (Guldenmund 2014). Reviewing, defining the concept of culture and addressing the four stages of cultural development was important to introducing organizational culture, which is discussed in the next section.

### **3.2.3 Organizational Culture**

Organizational culture is understood to be the result of history, market, technology, strategy, products, type of employee, and management and national culture. Together these represent the values, beliefs, and principles of organizational members (Needle 2010). It is harnessed to transfer knowledge, shape behaviours, and build commitments, and it makes an impact at different organizational levels. A planned organizational culture helps in providing greater control, commitment, and clarity, thereby forming a bridge between leadership and culture, together with performance, job satisfaction, employee attitude, and staff recruitment (Hemman 2002).

Diverse definitions have been given for organizational culture, with some referring to it as the shared values, norms, and tacit assumptions of members within an organization, while others assign a greater significance to the tangible characteristics of social practices and capacities. For instance, as defined by

Pronovost and Sexton (2005: p.231), organizational culture refers to a set of beliefs and assumptions that guide members' behaviours, and it has been commonly described as 'the way we do things around here'. Further, Schein (1992: p.12) defines organizational culture as:

“a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems”.

However, it has been claimed that the concept of organizational culture is relatively new, with early researchers only mentioning 'group norms' and 'climate' (Lewin et al. 1939; Katz and Kahn 1978). The concept of culture arose out of the need for the investigators to explain wide-ranging organizational behaviours and the stability levels of organizations (Ouchi 1981). It has thus emerged as representative of the differentiation between organizations in a society in terms of effectiveness achieved (Wilkins and Ouchi 1983). This concept has paid specific attention to the belief that organizations are open systems that exist in multiple environments. Any change in this environment produces stress within the various groups, giving rise to new learning and adaptation (Schein 1990).

Several researchers, including Wakefield et al. (2001), claim that organizational culture is a crucial determinant of patient safety in healthcare organizations. Krumberger (2001) and Clark (2002) suggested that there is a significant association between cultural factors and safety outcomes. They empirically demonstrated that patient outcomes improve as a result of changes or alterations in an organization's culture. The following section describes the linkage between organizational culture and safety in more detail.

### **3.3 SAFETY CULTURE**

Organizational culture is a major determinant of organizational safety (Cooper et al. 2008). Therefore, safety culture is a part of the organizational culture, which is assumed to influence members' perceptions and behaviour in relation to safety performance (Cooper 2000). The term 'safety culture' first emerged in the literature in the 1987 Nuclear Agency report (INSAG 1988) following the

Chernobyl disaster. Subsequently, this topic has been extensively discussed in the past two decades in many industries, such as the aviation industry (Steiner et al. 2002; Patankar et al. 2013), the nuclear industry (Lee and Harrison 2000), and the healthcare industry (Nieva and Sorra 2003; Patankar et al. 2013; Singer et al. 2015).

In the simplest terms, from a patient's perspective, safety refers to freedom from accidental injury (IOM 2006). In line with this, several definitions are suggested. For instance, Glennon (1982: p.25) refers to safety culture as the perceptions of the employees about the various characteristics of their organization "that have a direct impact on their behaviour to reduce or eliminate danger (safety climate) and, safety climate is a special kind of organizational climate". Dedobbeleer and Béland (1991) have also provided similar definitions of safety culture according to the perceptions of the workers involved. However, Ostrom et al. (1993) refer to safety culture as a set of attitudes or beliefs of workers. Pidgeon (1991: p.131) defines safety culture as:

"the set of beliefs, norms, attitudes, roles, and social and technical practices that are concerned with minimizing the exposure of employees, managers, customers and members of the public to the conditions that are considered dangerous or injurious".

This indicates the attitudes of workers, which eventually shape the safety culture of the organization. To be refine this further, we need to differentiate between safety culture and safety climate.

### **3.3.1 Safety Culture versus Safety Climate**

Safety climate and safety culture are not synonymous, although they are often used interchangeably in the literature (Singer et al. 2009b). Ostroff et al. (2003: p.567) define climate as:

"a perceptually based description of what the organization is like in terms of practices, policies, procedures, and routines, whereas culture, helps define the underlying reasons and mechanisms for why these things occur in an organization based on fundamental ideologies, assumptions, values, and artefacts".

However, safety climate is described as the surface features of the safety culture from the perceptions and attitudes of individuals at a given point in time (Gaba et al. 2003). Pronovost and Sexton (2005) state that safety climate refers to the shared perceptions regarding events, practices, and procedures. It further reflects the behaviour that is rewarded, supported, and expected in a particular organizational setting. Singer et al. (2009b) state that safety culture refers to employees' main ideology and orientation, and that it illustrates why an objective like safety is pursued in specific ways within particular organizations. The present research is focused on the concept of safety culture, as opposed to safety climate, due to the fact that 'climate' covers only the psychological aspect, while 'culture' includes a much wider gamut of psychological, behavioural, and situational factors (Cooper 2000). Safety culture in healthcare is addressed in the next subsection.

### **3.3.2 Safety Culture in Healthcare**

In an attempt to understand the root causes of errors and enhance safety, healthcare organizations have looked to industries with complex systems and that, crucially, are high risk to determine effective safety practices (Benzer et al. 2017). In addition, experience in other high-risk industries has provided a nuanced analysis that can be utilized to improve safety in the healthcare industry (Donaldson et al. 2000). Therefore, healthcare organizations are becoming aware of the significance of changing organizational culture in order to enhance safety (Nieva and Sorra 2003).

Risk management is always an integral part of medical procedures. Healthcare providers are strongly aware of the risks involved in different medical procedures or clinical trials of drugs (Patankar 2012). It has led to a more noticeable acceptance of the significance of the culture within organizations and teams (Foundation 2011). There are some characteristics that distinguish safety in the healthcare industry from other industries. These include (most unpublicized) errors in healthcare, and, within a clinical environment, that decisions are taken by patients in a patient-centred approach, and that junior healthcare professionals can question the authorities if any discrepancies at the workplace

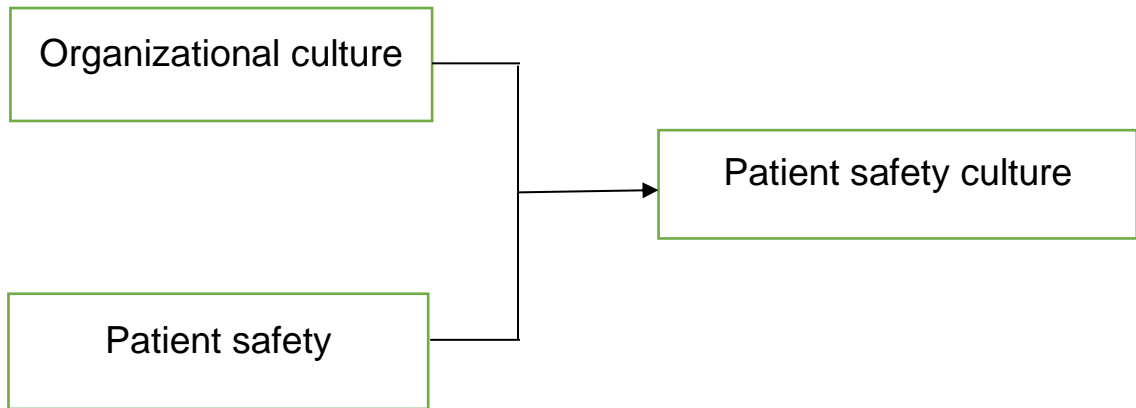
are observed. The next section has been allocated to the description of patient safety culture.

### **3.4 PATIENT SAFETY CULTURE**

In the healthcare industry, patients are the customers, and patient safety refers to the prevention and improvement of adverse outcomes or injuries stemming from the processes of healthcare (Katz-Navon et al. 2005). The culture of a healthcare organization is a crucial factor in the progress of its patient safety climate and the successful execution of quality improvement initiatives (Speroff et al. 2010). Nieva and Sorra (2003) indicate that creating the right culture supports the safety of the patient, whereas a poor culture is a clear risk factor that can threaten patient safety. Thus, having a culture that fosters safety within an organization is a crucial and substantial precursor to enhancing patient safety (Pronovost and Sexton 2005).

Katz-Navon et al. (2005) observed that fewer medical errors tend to happen in hospitals that adopt a culture of safety. Singer et al. (2009b) argue that patient safety improvements required organizational change, innovation, and risk management, which are components of the developmental safety culture. In the same manner, Xuanyue et al. (2013) maintain that if hospitals want to enhance patient safety, it is important to know more about the culture of patient safety. Hence, it is clear from the review that both organizational culture and patient safety have an impact on each other, i.e. having a culture augments the level of patient safety in an organization, and patient safety improvements also lead to the formation of an organizational culture. Hence, the literature suggests that there is interdependence between these two variables, as represented in Figure 3.2.





**Figure 3.2 Linking of organizational culture with patient safety**

*Source:* DeVised by author

### **3.4.1 Definitions of Patient Safety Culture**

The concept of patient safety culture is a critical issue of healthcare quality, demonstrated by the volume of articles examining safety issues and improvements (Sorra and Nieva 2004). However, there is no singular or clear definition of what, exactly, a patient safety culture is and how it is established; instead, there is a diverse range of definitions and social constructs that may be applied. Singer et al. (2009a:p.400) define patient safety culture as:

“the values shared among organization members about what is important, their beliefs about how things operate in the organization, and the interaction of these with work unit and organizational structures and systems, which together produce behavioural norms in the organization that promote safety”.

Xuanyue et al. (2013: p.44) define patient safety culture as, “an overall behaviour of individuals and organizations, based on common beliefs and values which aim to reduce the possible harm of the patient at the lowest level in the service procedure”; this will be adopted in this research. Typically, patient safety involves avoiding and limiting adverse outcomes or injuries that occur from healthcare delivery (Burnett et al. 2010).

Having defined patient safety culture, the next section aims to highlight the need to adopt a patient safety culture in hospital and pharmacy settings.

### **3.4.2 The Relevance of Patient Safety Culture**

Each year, tens of thousands of patients die as a result of avoidable adverse events. In the United States (US), the Institute of Medicine (IOM) estimated that between 44,000 and 98,000 people die in hospitals annually as a result of preventable medical errors, making this the eighth-leading cause of death in that country (Listyowardojo et al. 2011). In 2007, an estimated 9% of all patients admitted to US hospitals suffered an adverse incident (Nuckols et al. 2007). While not all accidents or errors are avoidable, researchers maintain that between 10% and 38% are preventable, resulting in a high avoidable human cost (Øvretveit 2009; Goh et al. 2013).

Major contributing factors to the avoidable incidences in hospitals include poor processes and procedures, estimated to be responsible for 90% of avoidable incidences (Listyowardojo et al. 2011). Bearing this in mind, the World Health Organization (WHO) endeavoured to strengthen global policies that would enhance the care offered in health services. The year 2004 saw the creation of the World Alliance for Patient Safety programme, which recommended to its member countries that attention be paid to the issues encompassing patient safety (WHO 2004). In the national context, there is a call to improve patient safety culture as an approach to enhancing patient safety in the Arab world (Elmontsri et al. 2017). Encouraging patient safety culture should involve key stakeholders, such as healthcare providers, those responsible for medical education, and policymakers (Hellings et al. 2007). How to manage the risk of healthcare organizations to improve the patient safety culture will be addressed in the next section.

### **3.4.3 Risk Management and Patient Safety Culture**

Previously, risk management and health quality improvement often operated separately in healthcare organizations. However, they now work together more effectively and efficiently to ensure that their respective organizations deliver safe and high-quality patient care (Top and Tekingündüz 2015). Researchers and health officials have widely held that healthcare is a high hazard and risk-prone industry that must strive towards ensuring an error-free performance from individuals (Nieva and Sorra 2003). As stated by Reason (1990), it must be

realized that humans have limited attention spans because of distractions and interruptions. This is to say, it must devise systems to ensure high levels of patient safety. Risk management thus plays an indispensable role in ensuring a patient safety culture in hospital pharmacy settings, or any other healthcare setting. Managing risk is essential to ensuring the implementation of a patient safety culture in different settings of healthcare, as explained above. The common and different aspects of patient safety culture in different settings are outlined in the following section.

#### **3.4.4 Patient Safety Culture in Different Settings**

Given the fact that safety culture is composed of individual and group attitudes, perceptions, skills, and patterns of behaviour, it can be concluded that this results in different degrees of commitment, style, and proficiency in health and safety management. Thus, the different settings in the healthcare industry will be characterized by varying safety cultures. Samsuri et al. (2015) claim that the perceptions of staff working in different settings vary owing to the comprehension of the patient safety domain, the type of institution with which they are affiliated, and the characteristics of the unit with which they are associated. Such wide variations in healthcare settings also necessitate the devising of different methods and strategies to be employed for improving medication safety (Classen and Metzger 2003). Primary healthcare varies from hospitals in terms of organizational structure and organizational process. Therefore, patient safety culture could differ between these settings (Desmedt et al. 2017). In this section, patient safety culture in primary care and hospital pharmacy settings are addressed, with a focus on hospital pharmacy settings.

##### **3.4.4.1 Patient safety culture in primary care settings**

Although patient safety incidents are less common in primary care, comprising about 2% to 3% of visits compared to about 10% of hospitals, the number of safety incidents in primary care is staggeringly high because the number of people who use primary care is much greater than those who use hospitals (Sarkar 2016). According to the European Commission, more than 37 million primary healthcare users in Portugal suffer an adverse event at least once in their lifetime. As the initial point of contact for individuals, families, and the

general community, primary healthcare facilities are as near as possible to where people stay and work and offer more personal and long-term care, which is the crucial issue for the design of active pre-emptive strategies (Ornelas et al. 2016). Therefore, it is essential for the primary healthcare industry to comprehend patient safety if they aim to minimize the incidence of adverse events (Kingston-Riechers et al. 2010). Sarkar (2016) states that the most common threats to patient safety in primary care settings are medication-related errors, communication failure, diagnostic errors, and fragmentation of the healthcare system. However, patient safety culture has been observed to take several forms in different healthcare settings, identified by different parameters. In Kuwait, family doctors or general practitioners play a significant role as gatekeepers to hospital care and specialist clinics (Ghobashi et al. 2014).

#### **3.4.4.2 Patient safety culture in hospital pharmacy settings**

As claimed by Cooper (2000: p.2), patient safety culture is composed of three major aspects: psychological, behavioural, and situational aspects. These refer to 'how people feel' (also known as the safety climate), 'what people do', and 'what the organization has', respectively. People, or the human resources team associated with pharmacies, are thus the crucial and influential stakeholders in the delivery of an acceptable patient safety culture. The pharmacy serves as a crucial link between the patient and the medication (Jia et al. 2014). Medication error and adverse drug events (ADEs) are the main threats against patient safety, but most are regarded as preventable. This indicates the indispensable need to develop a culture of safety for the patients.

Hospital pharmacists have demonstrated their role in enhancing the safety and effectiveness of drug therapy in various patient populations (Al Hamarneh et al. 2011). In addition, hospital pharmacists have the experience of handling drug-related problems during and after hospitalization (Schnipper et al. 2006). The research conducted by Smith et al. (1997) proved that the services of hospital pharmacists for patients discharged from hospital improved patient safety by reducing medication errors and adverse drug events, and therefore lowered cases of readmission to the hospital. Sorra and Nieva (2004) state that hospital pharmacists must proactively identify and eliminate the hazards that may hamper patient safety. Hence, the culture of hospital pharmacies is different from the

culture of other settings in regards to the manner of dealing with patients and the skills required. In fact, hospital pharmacists participate on the cardiopulmonary resuscitation team, in medical rounds, and in completion of admission drug histories (Al Hamarneh et al. 2011).

Explaining the patient safety culture in hospital pharmacy settings is the major topic, and focusing on hospital pharmacies of Kuwait is essential; this will be addressed in detail in Chapter 4. Challenges and barriers to patient safety culture will be outlined in the next section.

### **3.5 CHALLENGES AND BARRIERS TO PATIENT SAFETY CULTURE**

Although essential for patient safety culture, the idea of safety culture is somewhat broadly and arguably poorly defined (Guldenmund 2000). Also, Itoh et al. (2014) argue that there are no determined or specific ways to perceive, prioritize and respond to safety events. In addition, communication in healthcare is often inadequate and ineffective. Communication lapses were determined to be one of the major causes of adverse events reported to the Joint Commission between 2004 and 2010 (Smeulers et al. 2014). A study by Livorsi et al. (2016) assessed three types of communication practices in an intensive care unit (ICU): error reporting, providing feedback to authority figures, and handovers. These three practices were chosen because of their importance to patient safety. Results outline that hesitancy to speak up and suboptimal handovers have both been identified as contributing factors to adverse events. In addition, failure to report errors hinders system redesign and the prevention of future adverse events.

Despite their importance, these processes are incompletely implemented across healthcare systems, and numerous barriers have been identified. Hence, a lack of communication is one of the identified factors hindering the development of patient safety culture. Other studies have also found that a high percentage of nurses fear disciplinary action and, in turn, decide not to report errors (Ulanimo et al. 2007). Handovers are critical to maintaining the continuity of care, but there is no established standard for how they should be done (Smeulers et al. 2014). Prior studies have described the importance of minimizing interruptions

(Kowitlawakul et al. 2015), a common barrier identified in the survey conducted by Livorsi et al. (2016).

### **3.6 CHAPTER SUMMARY**

This chapter attempted to introduce to the concept of culture and how organizational culture has been linked with safety. The chapter briefed the readers on the development of safety culture and how it is different from safety climate, which is often thought to be synonymous with the former concept.

Next, the concept of patient safety was explained in brief, with a detailed section outlining the views of various authors on the need to have a patient safety culture. Another relevant variable to patient safety, i.e. risk management, has been studied in association with patient safety culture to outline the need to manage risk to enhance patient outcomes. Additionally, the culture of patient safety in various settings, such as primary care and hospital pharmacy settings, was explained within separate sections. The chapter was concluded by outlining various barriers to patient safety culture as presented in the existing literature. The next chapter addresses the patient safety culture specifically in a hospital pharmacy setting.

## **CHAPTER 4**

### **4 PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS – DEEP IMMERSION**

#### **4.1 INTRODUCTION**

Pharmacists play a notable role in patient safety, as patient safety is explicitly associated with errors in administering medication. The precision with which medication is dispensed is a crucial part in ensuring the safety and quality of medication usage. The hospital pharmacy setting is different from other settings in that it is more complicated and more specialized. The two most recent reports from the Institute of Medicine (IOM) recognized that pharmacists are a significant resource in safe medication use and play an essential role in improving patient safety (Kaboli et al. 2006). Hospital pharmacists have the experience to address drug-related problems during and after hospitalization. They can reveal and resolve medication contradictions (Schnipper et al. 2006).

Although several studies have analysed patient safety culture in a hospital setting, there is limited literature concerning patient safety culture in hospital pharmacy settings. Therefore, this section will focus on describing the same, i.e. the existing literature on the various aspects associated with patient safety culture in hospital pharmacy settings.

The previous chapter attempted to introduce to the concept of culture and how organizational culture has been linked with safety. Next, the concept of patient safety was explained in detail, including views of various authors on the need to have a patient safety culture and patient safety culture in different settings. The current chapter is the third episode of the literature review series, and will begin by familiarizing the reader with the concept of patient safety culture in pharmacy settings, followed by a discussion of the need for such a culture. Next, the role of pharmacy staff in ensuring patient safety culture will be explored. This chapter will conclude with a thorough description of the measurement tools for pharmacy patient safety culture, together with the chosen tool and all of its dimensions.

## **4.2 DEFINITIONS OF PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS**

There are many definitions among the literature about the culture of patient safety in general, but definitions of patient safety culture in pharmacy settings are scarce. Dooley et al. (2004: p.33) define patient safety culture in pharmacy settings, with an emphasis on medication, as the:

“Provision of information about a particular medication or a particular pharmaceutical function that is designed to optimize a given outcome of drug therapy for the patient or to prevent adverse drug events or contradictions of medication, and the taking of medication histories”.

The report of Blueprint (2009: p.12) defines patient safety culture in pharmacy settings, with a focus on medication distribution, as the:

"Interpretation and evaluation of a prescription, selection and manipulation or compounding of a pharmaceutical product, labelling and supply of the product in an appropriate container according to legal and regulatory requirements, and provision of information and instructions by a pharmacist, to ensure safe and effective use of the drug by the patient”.

Westat R (2012: p.1) defines patient safety culture in pharmacy settings with a comprehensive definition that includes medication distribution, patient counselling, patient education, medication use evaluation, and monitoring of adverse drug reactions as:

“the prevention of patient harm resulting from the processes of healthcare delivery by ensuring the right patient receives the right medication in the right dose at the right time by the right route, and the patient should understand the purpose and proper use of the medication”,

This definition is adopted to this research. Smith et al. (1997) claim that the responsibility of hospital pharmacists for patient safety is extended even to the period when the patient is discharged from hospital. Table 4.1 summarizes the definitions of patient safety culture in pharmacy settings.



**Table 4.1 Definitions of patient safety culture in pharmacy settings**

Author	Theme	Definition
Dooley et al. (2004)	Drug-focused	Provision of information about a particular medication or a particular pharmaceutical function that is designed to optimize a given outcome of drug therapy for the patient, or to prevent adverse drug events or contradictions of medication, and the taking of medication histories
Blueprint for Pharmacy (2009)	Drug distribution	Interpretation and evaluation of a prescription, selection and manipulation or compounding of a pharmaceutical product, labelling and supply of the product in an appropriate container according to legal and regulatory requirements, and provision of information and instructions by a pharmacist, to ensure safe and effective use of the drug by the patient
Westat R (2012)	Culture-focused	The prevention of patient harm resulting from the processes of healthcare delivery by ensuring the right patient receives the right medication in the right dose at the right time by the right route, and the patient should understand the purpose and proper use of the medication

Source: Devised by author

The need for patient safety culture in hospital pharmacy settings is outlined in the following section.

#### **4.3 THE RELEVANCE OF PHARMACY PATIENT SAFETY CULTURE**

Medication errors are the largest component of medical errors, representing around 25% that threaten the safety of patients (Jia et al. 2014). A study has been conducted by Bond et al. (2002); this suggests that, at a minimum, 90,895 patients yearly were harmed by medication errors in our nation's general medical-surgical hospitals. An environment built on the major pillar of safety culture is a prerequisite, as well as a top priority, for most healthcare organizations (Kuhn and Youngberg 2002): it must be recognized as a primary organizational goal. If hospital pharmacies want to enhance patient safety, it is important to be aware of the opinions of their workers about this.

In the healthcare sector, the application of the concept of safety culture occupies a position of extreme importance. Safety not only applies to the workforce, but

also applies to the patients who have the potential to be injured as a result of the actions of the staff (Flin et al. 2006). The development of a systematic and well-developed system for managing medical errors has emerged as a mandatory prerequisite for efficient healthcare units. This system needs to be further steered by pharmacists as the prime group in identifying medication-related problems and associated preventive pharmaceutical interventions to ensure patient safety (Cooper et al. 2008).

Al Hamarneh et al. (2011) found that hospital pharmacy organizations around the world are now directing pharmacists to expand their focus to include the enhancement of a safety culture. It is crucial to recognize what front-line pharmacists currently think of this practice. Understanding their role might help in enhancing an understanding of some assumptions about hospital pharmacy culture. Understanding the culture is essential because of its powerful impact on human behaviour, which would contribute to the improvement of the role of pharmacists in patient care and quality (Al Hamarneh et al. 2011). In the next section, the role of pharmacy staff in patient safety culture is discussed.

#### **4.4 ROLE OF PHARMACY STAFF IN PATIENT SAFETY CULTURE**

Pharmacists working within a hospital setting have proven the importance of their role in improving the safety of patients and reducing mortality by providing seven pivotal pharmacy services. These include evaluation of medication use, education provided by pharmacists in-service, observing ADEs, management of drug protocols, participation on the cardiopulmonary resuscitation team, participation in medical rounds, and completion of admission drug histories (Al Hamarneh et al. 2011). The participation of hospital pharmacists in patient care can enhance the quality of care given to patients and improve the outcome of patient safety (Kibicho and Owczarzak 2012).

Pharmacy staff can implement evidence-based practices to prevent ADEs and to minimize medication errors, including reconciliation of medication with prescription drug lists (Sivanandy et al. 2016). The professionals handling healthcare provisioning, especially pharmacists who have direct contact with the patient and the medication, must possess the required knowledge, up-to-date

skills, and sufficient experience to improve patient safety and thereby deliver high-quality services (Andermann et al. 2011). All healthcare staff should be encouraged and motivated to report errors without any fear of punitive action. Therefore, pharmacists must consider each medication error as an opportunity to become aware of the deficient or malfunctioning parts of the medication-use system (Phipps et al. 2009).

Alahmadi (2010) has further asserted that error reporting must not be regarded as an end in itself. On the contrary, it should be treated as a means to learn from mistakes and eventually eliminate any probable harm to patient safety. The adoption of such an attitude towards medication errors should make a direct impact on the pharmacists' interventions and the patients' adherence to their medical regime (Nguyen et al. 2010). As further claimed, pharmacists have the potential to improve treatment outcomes (Sanghera et al. 2006; Makowsky et al. 2009; Sivanandy et al. 2016). Such an awareness and identification of medication errors further reduces the probability of similar errors recurring in the future. Tsilimingras and Bates (2008) claim that the implementation of certain evidence-based practices can also control medication errors. Steps such as the implementation of specific adherence programmes and recommendations based on cost-effective therapies can result in several advantages, such as saving costs on unnecessary medications and avoidable hospitalizations and doctor visits.

Other researchers have also revealed factors that can be addressed to improve the role of pharmacists and their contribution towards a culture based on safety. For instance, Samsuri et al. (2015) and Byers and White (2004) found that stress recognition among pharmacists significantly contributed to increased performance, similar to the recognition of a lack of staff and patient volume.

Given the direct interplay between pharmacists and patients by way of delivery of the medication prescribed by doctors, pharmacists are in need of specialized training. Such training further inculcates conducive attitudes, behaviour, and a sense of responsibility towards a patient safety culture. The literature has primarily held that patient-centeredness is the most crucial aspect of healthcare that has a positive impact on patient safety (Berntsen 2006). Listyowardojo et al. (2011) assert that Malaysian pharmacists are noted to undertake specific steps

in regard to ensuring safe healthcare delivery to patients, as in the case of chronic diseases, such as diabetes. The pharmacists provide the Medication Therapy Adherence Clinic programme as a part of their concerted efforts towards patient safety.

The empirical research conducted by Owonaro et al. (2015) revealed that pharmacists prefer patient counselling, and that there is a need to improve the physical space and environment to ensure a patient safety culture exists within their pharmacies. However, the documentation of errors and mistakes was noted to be lacking, which indicates the need for further improvements in safety culture. Kibicho and Owczarzak (2012) maintain that pharmacy staff take responsibility for the prevention, clarification, and solution of ADEs problems, and are in charge of providing high-quality patient care. Explaining the role of pharmacy staff that improves patient safety culture leads us to discuss the measurement tools of patient safety culture in a pharmacy setting based on these roles.

#### **4.5 MEASUREMENT TOOLS OF PATIENT SAFETY CULTURE IN PHARMACY SETTINGS**

While several popular instruments have addressed patient safety culture in hospital and primary care setting (Nieva and Sorra 2003; Singer et al. 2009b; Ornelas et al. 2016), only a few instruments have assessed the patient safety culture in pharmacy settings. The most popular of these instruments is discussed in detail in the upcoming sections and is summarized in Table 4.2.

##### **4.5.1 National Survey of Pharmacy Practice in Hospital Settings**

The national survey of pharmacy practice in hospital settings was developed by the American Health System Pharmacy (ASHP). It facilitates technologies and practices that are used to manage and improve medication safety in a hospital pharmacy setting (Pedersen et al. 2001). The survey is carried out annually among US hospitals, and each year two out of the six aspects are evaluated. The survey consists of 68 questions to assess these aspects, which include prescribing, dispensing, transcribing, administration, monitoring, and patient education (Pedersen et al. 2017). Pedersen et al. (2013) maintain that although the challenges facing US hospitals remain significant, strategies to improve

medication-use continue to progress, and pharmacists are an important resource in achieving this. Again, Pedersen et al. (2013) argue that, in the evaluation of the aspect of monitoring, pharmacists have become more efficient in identifying patients receiving drug therapy that need to be monitored for effectiveness.

#### **4.5.2 Pharmacy Safety Climate Questionnaire**

Ashcroft and Parker (2009) identified that safety climate assessments had been developed in a range of high-risk industries, but in healthcare, only limited attention had been paid to psychometric factors in the design of safety climate instruments. They further recognized that most instruments were merely derived from work in other industries, with limited consideration of whether their use is legitimate in different settings. Therefore, drawing from this research gap, they were the first to develop and explore the component structure and internal consistency of a safety climate questionnaire for use in the community pharmacy setting (Ashcroft and Parker 2009). For this purpose, they developed the Pharmacy Safety Climate Questionnaire (PSCQ) to assess pharmacy staff's attitudes in community pharmacies. The PSCQ measures respondents' compliance with statements based on 34 items and 7 components: these are, investigating and learning from incidents; staffing and management; perceptions of the causes of incidents and reporting; teamwork; communication; commitment to patient safety; and education and training about safety (Ashcroft and Parker 2009). The components and items have been extracted by Ashcroft and Parker (2009) from a qualitative self-assessment safety culture framework (MaPSAF, Manchester Patient Safety Assessment Framework) that they had previously generated through focus groups and by reviewing the literature for use in community pharmacies.

#### **4.5.3 Pharmacy Survey on Patient Safety Culture (PSOPSC)**

AHRQ developed the original Pharmacy Survey On Patient Safety Culture (PSOPSC) in 2012 based on a pilot study that was intended to assess 11 dimensions of pharmacies in terms of 36 items of patient safety culture (Westat R 2012). The PSOPSC was designed specifically for pharmacy staff and asks for their views about the culture of patient safety in their pharmacies. The questionnaire also covered three questions that ask respondents to rate the

incidence of documentation of mistakes, and one question that presents an overall rating on patient safety (Westat R 2012). The original survey has been translated into multiple languages and used in different countries and cultures, including China (Jia et al. 2014) and Malaysia (Sivanandy et al. 2016). In addition, a substantial amount of PSOPSC data is available.

As presented by Westat R (2012), PSOPSC consists of 11 dimensions of patient safety culture, including communication about mistakes, communication about prescriptions across shifts, communication openness, organizational learning and continuous improvement, overall perceptions of patient safety, patient counselling, physical space and environment, response to mistakes, staff training and skills, staffing, work pressure, pace, and teamwork. Because of the importance, comprehensiveness, and substantial research that has been undertaken using this instrument, PSOPSC has also been chosen to be the research instrument in this study. However, a more detailed explanation of the choice of PSOPSC for this study will be presented in the methodology chapters, accompanying the discussion the research methods employed. In the next section, the 11 dimensions of PSOPSC will be explained in detail.

**Table 4.2: Instruments of patient safety culture in pharmacy settings**

	<b>National survey of pharmacy practice in hospital settings</b>	<b>Pharmacy Safety Climate Questionnaire</b>	<b>Pharmacy survey on patient safety culture (PSOPSC)</b>
<b>Element measured</b>	Six aspects: Prescribing; transcribing; dispensing; administration; monitoring; and patient education	Seven components: investigating and learning from incidents; staffing and management; perceptions of the causes of incidents and reporting; teamwork; communication; commitment to patient safety; and education and training	Eleven dimensions: Communication about mistakes; communication about prescriptions across shifts; communication openness; organizational learning improvement; overall perceptions of patient safety; patient counselling; physical space and environment; response to

		about safety	mistakes; staff training and skills; staffing, work pressure and pace; and teamwork.
<b>Questionnaire length</b>	68 questions	34 questions	36 questions
<b>Questionnaire available from:</b>	<a href="https://ashp.az1.qualtrics.com/CP/File.php?3UHVli58Q9eUTR3">https://ashp.az1.qualtrics.com/CP/File.php?3UHVli58Q9eUTR3</a>	Items published in Ashcroft and Parker, 2009	<a href="https://www.ahrq.gov/pharmacypatientsafetyculture/.html">https://www.ahrq.gov/pharmacypatientsafetyculture/.html</a>
<b>Strengths</b>	Assists in maintaining and enhancing the whole medication-use system and presents the role of pharmacists in this process	Meets criteria on component structure and internal reliability and assesses the pharmacy attitudes in community pharmacies	Good psychometric properties, tested in a large sample; comprehensive coverage of pharmacy safety culture elements; good supporting documents and benchmarking data available
<b>Weakness</b>	Questionnaire relatively long	Not sufficiently utilized in research	Generalization of results to different economies

Source: Devised by author

#### 4.6 DIMENSIONS OF PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS

As explained above, the PSOPSC consists of 11 dimensions. These dimensions have been determined based on a review of the literature and on a pilot study conducted on 55 U.S. pharmacies by the Agency for Healthcare Research and Quality (AHRQ) in early 2012. The 11 dimensions can be categorised into three sections: working in the pharmacy, communication and work pace, and patient safety and response to mistakes. These dimensions are explained in a comprehensive manner in the following sections.

##### 4.6.1 Physical Space and Environment

To provide convenient delivery options, changes are required in pharmacy workflow, technical design, and personnel (Szeinbach et al. 2007). Studies put

forward that the physical environment can be significant for patient comfort, patient privacy, patient safety, family integration with patient care, and staff working conditions in adult intensive care units (ICUs) (Rashid 2007). Research on the physical environment of healthcare studies the effects of interior design, architecture, furniture arrangement, art, building materials, lighting, building systems, maintenance plans, and other components that influence the patient experience. Research on the manner in which the physical environment and hospital design affect health outcomes started in the 1980s. More than 600 studies have associated the hospital's build environment with factors such as patient satisfaction, health outcomes, stress, and overall healthcare quality. As a result of these studies, it was shown that improved physical settings can be a significant means of enhancing patient safety, improving overall healthcare quality, and providing better places to work (Zimring et al. 2004).

#### **4.6.2 Teamwork**

To address quality care, a number of experts with different expertise must often work collectively (Lemieux-Charles and McGuire 2006). According to many specialists, and because of the growing complexity of healthcare distribution, teamwork is now an indispensable part of competent healthcare delivery, notwithstanding whether health professionals are allocated to designated teams, (Corrigan and Adams 2003). In the same manner, Thomas and Galla (2012) maintain that teamwork affects the effectiveness of patient safety and clinical outcomes. In addition, team training has been considered as a means to promote teamwork, minimize medical errors, and improve a safety culture in healthcare. Therefore, team strategies and tools to enhance performance and patient safety (TeamSTEPPS) have been implemented to address the main causes of medical errors. TeamSTEPPS was specifically prepared as a tool for healthcare staff to improve patient safety through effective communication and teamwork skills.

Singer and Vogus (2013) argue that teamwork amongst healthcare staff is a crucial component of a safety culture and a fundamental ingredient for lowering medical errors. The study conducted by Singer and colleagues (2009) found that there is an association between teamwork and better safety culture. Hence, teamwork is necessary for patient care and problem-solving activities to maintain



a safe environment. Many studies show that greater team functioning is correlated with favourable patient outcomes (Bower et al. 2003; Davenport et al. 2007) and cost economies (Grumbach and Bodenheimer 2004). Scholars have speculated that these advantages accumulate because sounder functioning teams make enhanced quality decisions, cope with complex tasks easily, generate more interspersed care plans based on consolidated expertise, and better organize their activities (Dean et al. 1999; Wagner 2000; Grumbach and Bodenheimer 2004). In addition, research indicates that factors contributing to adverse events in healthcare originate from flawed teamwork rather than from a lack of skills (Manser 2009). Hence, the literature suggests that teamwork is an important dimension of measurement of patient safety.

#### **4.6.3 Staff Training and Skills**

Globally, attempts to address increasing patient safety concerns, consumer pressure, and medical litigations have been sought by healthcare institutions, both governmental and non-governmental, to discuss gaps in patient safety and care dispersal. Several actions have been executed, including placing patient safety standards and addressing patient safety aims as part of a hospital accreditation method, as well as increasing spending on staff training (Al-Awa et al. 2011). Worsley et al. (2016) maintain that developing skills and training in managing healthcare organizations leads to a sustained change in quality and safety projects, and that these are desirable skills in a flexible, modern healthcare professional. Flin and Patey (2009) argue that the introduction of training programmes for healthcare providers may ultimately help to enhance the safety culture by shifting the norms of acceptable behaviour. In addition, human factor training can reduce the potential for errors and allow clinical staff to focus directly on improving patient care. Hence, staff training and skills account for an important dimension for the measurement of patient safety.

#### **4.6.4 Communication Openness**

Communication openness may be defined as “Staff freely speaking up about patient safety concerns and feel comfortable asking questions; staff suggestions are valued” (Westat R 2012: p.2). Leape et al. (2009) stressed that patient safety culture requires open communication and depends on a culture of trust, reporting,

transparency, and discipline. Previous studies suggest that ineffective communication amongst healthcare professionals is one of the major causes of medical errors and adverse outcomes for the patient (Leonard et al. 2004; Lingard et al. 2004; Woolf 2004).

The increasing focus of researchers on safety and error prevention demonstrates that weak or inadequate communication among team members is an important contributing factor that leads to adverse events. In the acute care setting, communication malfunctions point to a rise in patient harm, resource use, and length of stay, as well as more severe caregiver disappointment, resulting in a more rapid staff turnover (Dingley et al. 2008). In addition, the enhancement of patient safety needs to focus on open communication, shared responsibilities for planning and problem solving, and shared decision making (Boyle and Kochinda 2004). Elmontsri et al. (2017) argue that although teamwork training may help in enhancing patient safety (as it also helps in decreasing misunderstandings among individuals and teams), teamwork efforts cannot be successful without open communication within the care team. Hence, the literature sufficiently supports the need for communication openness in ensuring patient safety, which reflects its suitability in being considered as a dimension for measuring the same.

#### **4.6.5 Patient Counselling**

Yang et al. (2016: p.2) define patient counselling as “providing medication information orally or in written form to the patients or their representatives on directions of use, advice on side effects, precautions, storage, diet, and lifestyle modifications”. Smith et al. (1997) maintain that data indicate that counselling patients before discharge decreases medication contradictions and improves patient safety. Patient counselling by pharmacists is a diverse and ill-defined activity. It is also an activity that is achieving more prominence as part of the ‘extended role’, which is seen as the way forward for the profession (Pilnick 1999). Patient counselling is a significant element of the dispensing process and is necessary to ensure that the patient receives and understands essential information, such as the name of the drug and the purpose of the medication. Patient counselling also provides a pivotal opportunity to identify potential dispensing errors. Unfortunately, counselling may be missed when the

medication is delivered to the patient, which is likely to cause serious consequences (Stewart et al. 2007). Patient counselling would not only help to educate patients about their medications, but would also help to open additional communication lines between the pharmacist and the patient (Yang et al. 2016). This would enable pharmacists to provide better healthcare as they would be sufficiently notified of the patients' overall health, and could further assist the patient in leading a better, healthier life (Schnipper et al. 2006).

#### **4.6.6 Staffing work pressure and pace**

Staffing work pressure and pace can be defined as “the discussion about staff, numbers, frequency of work hours, temporary or permanent staff, and crisis mode working in healthcare organizations” (Westat R 2012: p.2). As per a study by Amponsah-Tawaih and Adu (2016), work pressure and safety behaviour are negatively correlated, with work pressure having a direct negative impact on safety behaviour and the management's commitment to safety. It is therefore a requirement that safety interventions or programmes must centre on assisting organizations to develop and execute policies, structures, and systems that will develop a culture aimed at curbing work pressure. A study by Rogers et al. (2004) also found that the risks of making an error in healthcare significantly rises when work shifts of staff members were more prolonged, for example, longer than twelve hours, when nurses overworked their regular shift, or when they worked for more than forty hours each week. Sexton et al. (2000) argue that in the healthcare and aviation industries, the avoidance of stress and work pressure, and even the healthy recognition of stressors, decreases the likelihood of error and increases the use of error management strategies.

#### **4.6.7 Communication About Prescriptions Across Shifts**

Communication about prescriptions across shifts may be defined as:

“communicating about the issues usually faced during shift overs and handovers and discussing the issues. Issues in the context of patient information lost and problems during shifts in hospital units because shift changes are prone to errors” (Westat R 2012: p.2).

Effective communication within pharmacies is crucial and believed to improve health outcomes (Oates et al. 2000). On the other hand, ineffective

communication amongst healthcare providers is one of the leading causes of medical errors and patient injury (Dingley et al. 2008). Recent evidence hints that unfavourable events emerging from errors occur at unacceptably high rates in the inpatient context, and that weak or inadequate communication among team members is usually a contributing factor (Sexton et al. 2000).

As per a study conducted by Abebe et al. (2017) based on the retail pharmacists in the USA, nearly half of responding pharmacists stated that they were given insufficient details at the time of the shift change, and disturbances and interruptions meant that much information was missed or forgotten. Poor handoff quality showed a positive correlation with a high workload, interruptions and disturbances, and the 24-hour service. These pharmacists recorded that a poor handoff led to an augmented workload, giving way to repetitive and redundant work, as well as increasing the likelihood of making errors. According to Kerr et al. (2017), pharmacists' communication must develop towards a more patient-centred approach, and increased research is required to ascertain the best ways to develop it and ensure a definite result for pharmacy education in healthcare outcomes.

Considering the importance of communication in pharmacies, especially while changing shifts, the relevance of this dimension cannot be neglected and forms an essential component of the PSOPSC.

#### **4.6.8 Communication About Mistakes**

Communications about mistakes may defined as:

“staffs have the freedom to discuss errors and mistakes occurring in the organization and have the capability to raise questions against authority in case of identification of any mistakes” (Westat R 2012: p.2).

Within the health sector, inter-professional communication regularly involves the interaction of various healthcare professionals. Communication is the key to effective collaboration between and within healthcare teams (Marshall et al. 2009). Issues in communication, especially the transfer of clinical information, have been identified as one of the most critical factors in serious adverse events in Australian healthcare settings (ACSQHC 2011), and communication failure

causes about 70% of medical incidents (Lingard et al. 2004). Inter-professional communication is complex, and communication barriers can lead to ineffective communication within inter-professional teams (Oandasan et al. 2009). The medication management cycle indicates that decisions from appropriate treatment to the transfer of verified information are all based on communication between pharmacy professionals (Leotsakos et al. 2014).

According to a study by Rickles et al. (2010), five central themes appeared concerning medication mistakes and communication:

- (1) pressure to be perfect;
- (2) feeling comfortable speaking about mistakes;
- (3) accepting and communicating accountability for errors;
- (4) learning how processes can add to errors and their prevention; and
- (5) insufficient and irregular training on ways to manage medication errors.

A pharmacist's lack of comfort in the revelation of medication failures is often a hindrance to good communication skills: clinicians are often reluctant to report or disclose errors. Patients describe that they are not usually provided with a clear explanation of what will be done if an unforeseen medication consequence transpires; they often sense being distanced from healthcare team members and organizations, as they get few answers when a mistake does occur (Aspden et al. 2007). Patients require errors to be revealed and usually solicit information about the reason for the error, how the error's outcomes are to be alleviated, and how recurrences are to be avoided (Gallagher et al. 2003). Severe and harmful medical errors are seldom disclosed to patients (Levinson and Gallagher 2007).

#### **4.6.9 Response to Mistakes**

A mistake is any type of medication error, incident, or quality-related event, regardless of whether it reaches the patient or results in patient harm. Mistakes may be related to, or include, prescribing, transcribing, dispensing, administering, monitoring (use of medication), unsafe conditions, and procedures in the pharmacy (Westat R 2012). Szeinbach et al. (2007: p 2013) define dispensing errors as:

“any inconsistencies or deviations from the prescription order such as dispensing the incorrect drug, dose, dosage form; wrong quantity; inappropriate, incorrect, or inadequate labelling, confusing, or inadequate directions for medication use; incorrect or inappropriate preparation, packaging, or storage or medication prior to dispensing”.

Dean et al. (2002) argue that the response to mistakes has been a focus on personal accountability, whatever the circumstances, but findings of studies on industrial errors have resulted in the development of frameworks to discuss and analyse the causes of errors and to propose solutions that have been applied to medical errors.

Therefore, to achieve a reduction in mistakes, we need to speak up and discuss the cause of errors within a ‘no-blame’ culture (Dean et al. 2002). Efficient communication skills can assist pharmacists in maximizing resolution and minimizing the adversarial impact of medication failures (Greenhill et al. 2011).

“There seems to be a mistake with my prescription’ – No pharmacist would ever want to hear a patient say these words. To err may be human, but medication mistakes, in particular, have the likelihood of causing serious professional, legal, medical, and emotional outcomes” (Quiring, 2001: p.55).

Pharmacists can lessen this negative influence by strengthening professional skills to improve their confidence and effectiveness in handling medication errors (Quiring, 2001). There are various ways in which a pharmacist should respond, ideally on the occurrence of a mistake or medication error. Quiring (2001) suggested a series of steps for the same, which are as follows: in the case of a clear-cut mistake, the pharmacist should accept the mistake and apologize sincerely. Next, it is advisable to examine the nature of the concern and acknowledge the patient’s sentiments and anxieties. Reassurance needs to be offered to the patient next. Following this, thank the patient for their understanding, tolerance, or assistance. It is also essential to document the incident, including all relevant events, dates, and specific details of the occurrence. Further, entering a note of this information in the patient’s history also is prudent. A pharmacist should also consider a follow-up with the patient. A follow-up phone call can contribute to the re-establishment of trust with the patient (Mesquita et al. 2010). Hence, in consideration of the importance of responding

appropriately to medication errors associated with healthcare and patient safety, the importance of inclusion of the response to mistakes as a dimension in the PSOPSC cannot be undermined.

#### **4.6.10 Organizational Learning Improvement**

Organizational learning can be seen as the process of creating, retaining, and transferring knowledge within an organization (Argote 2012). On a daily and weekly basis, organizations have the ability to improve over time if they use the experience accumulated to improve work practices and overall organizational effectiveness. The term 'organizational learning' suggests that learning should happen beyond the individual level. Healthcare organizations operate in a highly changing, hazardous, and complex environment. Also, they have real challenges in the ability to achieve the desired outcomes (Gaba 2000). To adapt to the changing, hazardous, and complex organizational landscape, to absorb the increasing of quantities of clinical information, and to continuously improve delivery systems, policies, and processes, healthcare organizations must begin to be 'learning organizations' (Carroll and Edmondson 2002).

Collective organizational learning can be the foundation upon which healthcare organizations can accomplish quality and safety improvement (Singer et al. 2015). Hence, organizational learning improvement is likely to result in positive influences on patient safety, which reflects the importance of this dimension in the PSOPSC.

#### **4.6.11 Overall Perception of Patient Safety**

Professional groups differ in how they perceive various dimensions of safety culture (Listyowardjo et al. 2011). Samsuri et al. (2015) conducted a study to assess the safety perceptions of pharmacists based in Malaysia and concluded that as the perceptions improved, the amount of medication errors recorded declined. Furthermore, they suggested that the pharmacists in ambulatory units and outpatient services, and those associated with health clinics, had better perceptions concerning safety culture. Pharmacists differ in how they perceive various domains of safety culture based on the institution and units that they serve, indicating that safety culture is integrated within a unit of an organization,

and that disparity at the level of a unit cannot be neglected. According to Huang and Li (2010), the perceptions of management and emotional exhaustion are essential components that contribute to a better patient safety culture.

As suggested by the literature, it can be seen that the perception of pharmacists and healthcare staff is an important contributor to the patient safety culture; this strengthens the stance of its inclusion as a dimension in the PSOPSC.

Table 4.3 presents definitions of the 11 PSOPSC dimensions that are discussed above.

**Table 4.3 The Definitions of the 11 Dimensions of PSOPSC**

No	Patient Safety Culture Composite	Definition: The extent to which...
1	Physical Space and Environment	The pharmacy is well organized and free of clutter; the pharmacy layout supports good workflow
2	Teamwork	Staff treat each other with respect, work together as an effective team, and understand their roles and responsibilities
3	Staff Training and Skills	Staff get the training they need, new staff receive orientation, and staff have the skills they need to do their jobs well
4	Communication Openness	Staff freely speak up about patient safety concerns and feel comfortable asking questions; staff suggestions are valued
5	Patient Counselling	Pharmacists spend enough time talking to patients and tell them important information about new prescriptions
6	Staffing, Work Pressure, and Pace	There are enough staff to handle the workload, staff do not feel rushed, staff can take breaks, and work can be completed accurately despite distractions
7	Communication About Prescriptions Across Shifts	Information about prescriptions is communicated well across shifts, and there are clear expectations and procedures for doing so
8	Communication About Mistakes	Staff discuss mistakes that happen and talk about ways to prevent mistakes
9	Response to Mistakes	The pharmacy examines why mistakes happen, helps staff learn from mistakes, and



		treats staff fairly when they make mistakes
10	Organizational Learning Improvement	The pharmacy tries to figure out what problems in the work process lead to mistakes and makes changes to prevent mistakes from happening again
11	Overall Perceptions of Patient Safety	There is a strong focus and emphasis on patient safety and the pharmacy is good at preventing mistakes

Source: (Westat R 2012: P.2)

#### **4.7 CHALLENGES AND BARRIERS TO PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS**

There are different organizational structures that can have a significant impact on the overall role played by a hospital pharmacy. According to Setiadi et al. (2017), the pharmacy, which forms an integral part of hospital-based healthcare, takes different positions under different hospital settings. It is considered a service department if it is managed as an ancillary service, while if it is under the clinical support or patient care division, then the pharmacy and pharmacists are regarded as participants in direct patient care. Therefore, the challenge is how to look at a hospital pharmacy within the hospital. Izquierdo et al. (2013) also claim that the safety culture adopted by pharmacy settings is influenced by the hospital type, characteristics of professional groups within the pharmacy, and its other affiliations. This indicates that the workers' perspectives towards these different pharmacy settings and placement within the healthcare department will simultaneously vary.

Izquierdo et al. (2013) show that although the pharmacists affiliated with professional organizations (or hospitals) demonstrated supportive attitudes towards ensuring medication safety, pharmacy technicians generally do not. They were reported to be highly unsupportive of their new roles in the wake of the clinical pharmacy activities required in addition to their other responsibilities.

In their research based on Australian hospital pharmacies, Lalor et al. (2015) reported that training pharmacists was also a solution. They reported that pharmacy technicians lacked an understanding of both the importance of practising safety and reporting errors to enable learning and prevention in future.

It was also found that staff had a lack of power or authority, which limited their ability to raise concerns about potential safety issues. Also, Schnipper et al. (2006) state that hospital pharmacists deal with critical and complicated cases that need specific skills and sufficient experience. Hence, a lack of experience and a lack skills are the most common threats to patient safety in a hospital pharmacy setting.

#### **4.8CHAPTER SUMMARY**

This chapter has discussed the literature pertinent to the concept of safety culture in hospital pharmacies, followed by an explanation of why it is needed. A section was devoted to the role of pharmacy staff in establishing and maintaining patient safety culture. This chapter also outlined the measurement tools of patient safety culture in pharmacy settings, and has discussed three relevant assessment tools in detail. In addition, the 11 dimensions of patient safety culture measurement in the context of hospital pharmacy settings have been discussed in detail, together with the relative importance of each. This chapter concluded with a discussion of the challenges and barriers to patient safety culture in hospital pharmacy settings.

## **CHAPTER 5**

# **5 THE CONNECTION BETWEEN ORGANIZATIONAL LEARNING AND PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS: CONCEPTUAL FRAMEWORK**

### **5.1 INTRODUCTION**

The research presents the idea that enhancement of patient safety culture is a result of adequate individual and organizational learning (Dekker et al. 2011). The previous chapters attempted to provide a broad review of the literature relating to the organizational learning and patient safety culture in hospital pharmacy settings and their dimensions. The current chapter aims to review the theoretical and empirical literature addressing the relationship between organizational learning and patient safety culture in hospital pharmacy settings. In addition, this chapter reviews the existing conceptual frameworks that address the relationship between organizational learning and patient safety culture in order to reach the optimal conceptual framework for this thesis.

### **5.2 THE RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING AND PATIENT SAFETY CULTURE IN HOSPITAL PHARMACIES**

Patient safety culture may be expressed as a combination of the shared values, attitudes, behaviours, opinions, and approaches of the workforce in a healthcare centre (Shojania et al. 2001). Errors and maltreatment were considered marginal concerns to mainstream health services research and healthcare policies, however, by the end of the 1990s, almost a decade after the seminal Harvard study, change was noticed as an intensified attentiveness of patient safety was created. The new reports placed patient safety firmly on the health policy agenda and led to a growing field of learning and research in patient safety. Although hospitals have an established 'organizational safety culture' through the incorporation of learning, the pharmacies in hospitals need a similar framework (Sammer and James 2011).

An improvement in the patient safety culture is a priority for the pharmacists; this requires broadening the investigative lens by employing theories and frameworks that encompass the convolution of patient safety and organizational learning, to

examine facets of learning in the setting of hospital pharmacies that are otherwise overlooked within the conventional studies. The assortment of existing literature on patient safety culture draws on a variety of theoretical and empirical approaches to examine and interrogate the patient safety culture. The subsections below elaborate and analyse the aspects of the patient safety reforms and organizational learning, including its theoretical foundations, practical application and demonstration in clinical practice, whilst also contemplating the wider inferences for the organization and delivery of healthcare services.

### **5.2.1 Theories Based**

The literature is filled with articles that conclude the existence of a strong link between organizational learning and patient safety (Eisenlohr et al. 2002; Singer et al. 2012b; Goh et al. 2013; Edwards 2017). Edwards (2017) argues that the theoretical basis for organizational learning has a long past. In healthcare, the basic theory suggests that organizational learning directs greater patient safety (or just to safety in other fields). The studies advocate the positive relationship between an organization's learning and patient safety as organizational learning leads to better safety protocols and strategies, enhancing the patient safety culture.

Senge (1990) associated the term 'learning organization' with a situation wherein people are continually learning together for the most effective outcomes from the healthcare organization. A successful learning organization in Senge's systems theory has the capacity to modify and manage modifications by having the workforce adopt system thinking, attain personal mastery, share mental models, have a shared vision, and learn in teams. Nonaka et al. (2000) also recommended a model of organizational learning as the process of knowledge management where they deliberate the knowledge spiral. The process of organizational learning assists in transforming an individual's implicit knowledge into explicit knowledge through a system of socialization and externalization, which is sequentially distributed through the organization, and, in turn, promotes learning.

Rowley and Waring (2011) examined and critiqued the conventional theories observed in policies and the mainstream research on patient safety culture. Rowley and Waring recommend an unconventional conceptualization of the patient safety domain, by developing a model of learning that is principally linear and abstract, unlike other, more positioned models of action learning. They focused on how the problem is described, the issues highlighted and the means of addressing them; this involves observing socio-cultural and political concerns as central to patient safety.

Carroll and Edmondson (2002) present mental models of organizational learning in healthcare, which recommends that the competence of a surgeon is judged by the number of times the procedure has been performed; this implies that learning is characteristically viewed as independently focused training, continuing medical education to transfer the best practices, and repetition to improve skills. The mental model was created to emphasize the presence of a system of beliefs that holds the ability to interpret observations and further influence behaviour.

Henriksen et al. (2008) reviewed the literature on patient safety and offered a high-level descriptive model that highlighted the four major dominions, namely, workers, recipients, the care delivery process, and methods for feedback/improvement. In addition, Chassin and Loeb (2013) stated an empirical framework for addressing the question of high dependability and consequently worked with a limited number of hospital leaders to develop a matrix of characteristics for assessing the progress through organizational learning. Although these models are beneficial for specific purposes, they have not served to assist the hospitals.

The safety culture assessments have been established in a range of high risk industries. In the context of healthcare, valuations of patient safety culture have predominantly focused on hospital settings, although contemporary developments showcased tools that are directed at assessing the fundamental safety culture in a general practice. However, there is a lack of conceptual frameworks in the context of hospital pharmacies as the models established for the hospitals cannot be applied in the pharmacy setting. The study therefore aims to develop a framework that could be used by hospital pharmacies to self-assess their current level of safety culture maturity. Specifically, the emphasis has been

laid on developing a self-assessment framework that contains high face validity and is acceptable and feasible for use in hospital pharmacies.

### **5.2.2 Empirical Grounded Based**

Walpola et al. (2017) conducted a study to determine if an education programme would improve the attitudes regarding patient safety among intern pharmacists. The attitude of pharmacists towards patient safety is varied; there is no single consistent attitude among all pharmacists. The authors set up an experiment with intern pharmacists. Attitude surveys towards patient safety were administered immediately before the programme, immediately after the educational patient safety programme, and three months after the programme.

The educational programme included discussions on different concepts of patient safety, such as effect of harm, communication skills, managing clinical risk, medication safety issues, and teamwork (Walpola et al. 2017). The study revealed four underlying attitudinal factors, including attitudes towards addressing errors, questioning behaviours, blaming individuals, and reporting errors (Walpola et al. 2017). Improvement in all areas was immediately observed. After three months, however, only improvement in attitudes about blaming those who had been involved in errors lasted.

Firth-Cozens (2001) discourses the learning that can occur within organizations and the cultural change essential to boost it. The study concentrates on teams and team leaders as the potential powerful forces for transforming the management of patient safety and thus, provision of improved quality care. Although, generally, individual and organizational learning must happen for healthcare to intensify patient safety, the study indicates that this would happen best within the context of a well-functioning team.

El-Jardali et al. (2014) describe the findings of a baseline valuation of the patient safety culture in a large hospital in Riyadh, and compares the results with regional and international studies that applied the hospital survey on patient safety culture. The study explored the connection between patient safety culture forecasters and the outcomes. The focus was on a customized version of the pharmacy survey on patient safety culture (HSOPSC) and hospital staff fitting the sampling criteria. The study claimed that the areas of strength were organizational learning,

continuous improvement and teamwork within the unit. Patient safety practices are vital for improving overall performance and quality of services in healthcare organizations.

Further, Ghobashi et al. (2014) studied the absence and prospects in primary healthcare settings. The study suggested the necessity for a well-designed patient safety initiative to integrate healthcare institutions with organizational policies, particularly to address medical errors and their disclosure, communication and emotional issues, and organizational learning. Al-Ahmadi (2009) also identified organizational learning as the most positive and non-retributive answer to errors as the weakest aspect of patient safety culture in public and private hospitals.

Aboneh et al. (2017) described safety culture of community pharmacists practicing in Wisconsin; they measured patient safety using the Agency for Healthcare Research and Quality (AHRQ) Community Pharmacy Survey on Patient Safety Culture and assessed the predictors of patient safety. They concluded that pharmacies attempt to analyse problems in the work process that lead to mistakes, together with making changes to prevent the mistakes from happening again.

Existing studies have focused on the importance of reporting safety related events to healthcare providers, but there is a lack of emphasis on the definition and classification of events, which, in turn, affects a pharmacy's ability to learn from its experience. The examination of influence of the definition and classification of safety related events in a pharmacy on the key routines for gathering information, allocating incentives, and analysing event reporting data is significant, as it can result in the improvement of quality and other outcomes by enhancing the capability for learning. The literature is replete with examples of successful quality and safety improvement initiatives in all types of hospitals; however, most examples are infrequently replicated, ignoring the subject of hospital pharmacies. Thus, this study focuses on organizational learning in hospital pharmacies.

### **5.3 CONCEPTUAL FRAMEWORK**

The conceptual framework is not just an aggregation of concepts but, rather, a construct in which each concept plays an integral role (Jabareen 2009). A conceptual framework is defined by Miles et al. (1994: p. 440) as “visual or written products, that explains either graphically or in narrative form, the main things to be studied – factors, constructs, or variables – and presumes relationships among them”. Therefore, concepts that form a conceptual framework support one another, explain their respective phenomena and establish a framework-specific philosophy (Jabareen 2009). In the subsequent sections, the prevailing conceptual models and frameworks that connect organizational learning with patient safety culture have been reviewed critically to utilize them in building a suitable conceptual framework for this study.

#### **5.3.1 Existing Conceptual Models of Organizational Learning and Patient Safety Culture**

As a result of the necessities for high dependability and the increasing gap between the present performance and the supposed target of zero preventable harm, steps have been taken to cultivate conceptual frameworks for patient safety research (Pronovost et al. 2009), to decrease unnecessary harm (Pronovost et al. 2011), to involve surgeons in excellence and safety at academic medical centres (Taitz et al. 2012), and in the measurement of dependability in hospitals (Ikkersheim and Berg 2011). The models established by Goh et al. (2013), Edwards (2017) and Singer et al. (2015) have been chosen to be presented in the next subsections, because while the three models share the fact that they connect organizational learning with patient safety culture, each model presents it in a unique way.

##### **5.3.1.1 Goh Model**

Goh et al. (2013) endeavoured to make leaders in healthcare consider the concept of organizational learning in order to foster collaborative learning among teams in their own institutions as they attempt to improve patient safety. Further, they review the relevant literature on patient safety culture, organizational learning, teamwork and collaboration, subsequently developing and proposing a

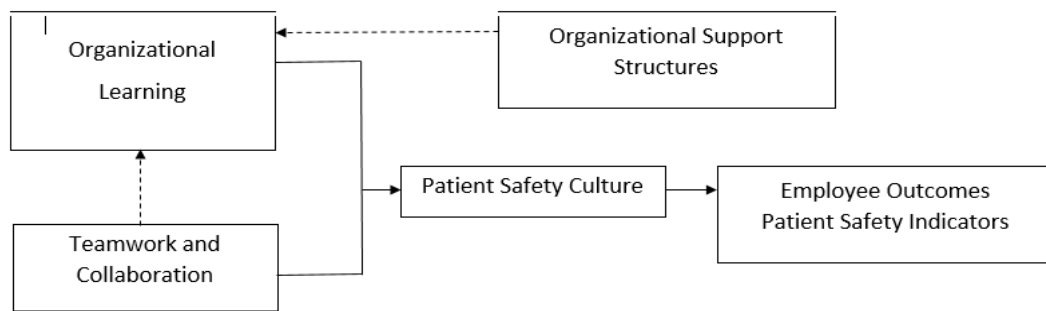


conceptual framework that links these concepts; such a conceptual framework is necessary for a more holistic way of understanding patient safety.

Goh et al. (2013) argue against a blame culture towards the learning culture for patient safety, because a punitive culture for employees acts as a strong barrier to employee acknowledgment of errors. In addition, they promote the premise that a safety culture is a more focused approach of dealing with errors. According to Goh et al. (2013), this type of culture requires strong leadership because the focus is not on who made the mistake but on how the organization can learn from their mistakes. The existing literature suggests that “patient safety culture is a multidimensional construct with factors such as senior manager engagement, unit safety norms, blame fears and learning” (Goh et al. 2013: p. 423). The authors also point to the evidence that organizational learning can have a positive impact on patient safety culture.

Goh et al. (2013) reviewed existing studies on patient safety to develop a conceptual framework that incorporates the fragmented literature that generally emphasizes a single factor to highlight patient safety outcomes; their model therefore makes efforts to further research in this area. The conceptual framework proposes potential connections among the variables and its influence on employees and patient safety outcomes.

Goh et al. (2013) argue that patient safety is a more integrated framework as it is strongly influenced by underlying micro-level aspects, such as organizational structures, team collaboration and an organizational learning environment. Thus, the relationships between the concepts in their framework have been examined systematically. The framework will contribute by adding knowledge to the understanding of the importance of medical errors and their effect on the patient safety climate. Similarly, healthcare employee outcomes such as job satisfaction, which has implications for staff turnover, will benefit from this framework as the learning allows designing health information technology and educational material to support the care delivered by healthcare facilities collaboratively.



**Figure 5.1 Conceptual framework linking organizational learning, teamwork, patient safety culture and outcomes**

*Source:* Goh et al., 2013: p.426

As shown in Figure 5.1, the conceptual framework developed a link between organizational learning, teamwork, patient safety culture and outcomes. They suggest and demonstrate that, with the aid of teamwork and collaboration, organizational learning can improve patient safety. They suggest that an environment of teamwork and collaboration encourages knowledge sharing and dealing with adverse events and reporting failures; thus, teamwork and collaboration can also have a positive impact on patient safety culture and organizational learning (Berta and Baker 2004; Holden et al. 2010). In addition, organizational support structures, such as training and knowledge of working in teams and a non-hierarchical organization design, are also necessary to increase learning capacity.

### **5.3.1.2 Edwards Model**

Edwards (2017) reports that the concept of the learning organization originated with Argyris and Schön (1978) work and was furthered by several other theorists. Senge (1990), for instance, integrated the concept of the learning organization with general systems theory. Organizational learning theory evolved contemporaneously with the quality management movement that was initiated by Deming (1993).

Organizational learning has a rich theoretical and practical background. As it progressed, organizational learning has captured the major themes that have emerged over the last decades in healthcare safety (Edwards 2017). Various

authors have defined the individual themes of organizational learning. Some common themes constitute building a learning climate and culture that gives opportunities to learn to all (Argyris and Schön 1978; Senge 1990; Nevis et al. 2000; Yeganeh and Kolb 2009), facilitates experimentation and learning from experience for its members, and proffers relevant feedback and guidance as and when needed (Senge 1990; Isaacs 1993; Nevis et al. 2000); people being inspired to accept responsibility that is likely to enhance their professional development, as supported by the leader (Senge 1990; Argyris and Mlejnek 1991; Nevis et al. 2000); and the role and responsibilities of the leader while acting as a guiding force towards the learning process, who has to uptake varied, active roles depending on the specific situations (Argyris, 1991; Nevis, et al., 1995; Peter Senge, 1996b). A final theme common to all organizations would be that learning organizations are created by empowering employees in the improvement of their working context and making them dedicated to constant personal development (Senge 1990; Isaacs 1993; Senge 2004).

The conceptual framework proposed by Edwards (2017) is presented in Figure 5.2. This consists of four major modes of organizational learning: learning from the experience of others, learning from the work of identifying and analysing process defects, learning from feedback, and learning from the results of responses to unexpected threats to quality and safety. These support the four themes that include collaboration, no blame for human error, accountability for performance, and situational mindfulness within a system context that includes modes of leadership behaviour, physical, technological, and financial environment and organizational culture, capabilities, and resilience to improve patient safety.

Of the four modes of organizational learning, learning from others (collaboration) has been said to have clearly dominated current practices. The multi-facility collaborative model has helped in sustaining the most apparent and successful work in the area of patient safety. A lot of value has been imparted to the healthcare sector from studies conducted in other industries. Additionally, normative databases are easily and more frequently available as a means of benchmarking and identification of best practices. The relative convenience of

learning from others may have inadvertently contributed to the relative neglect of other modes of learning.

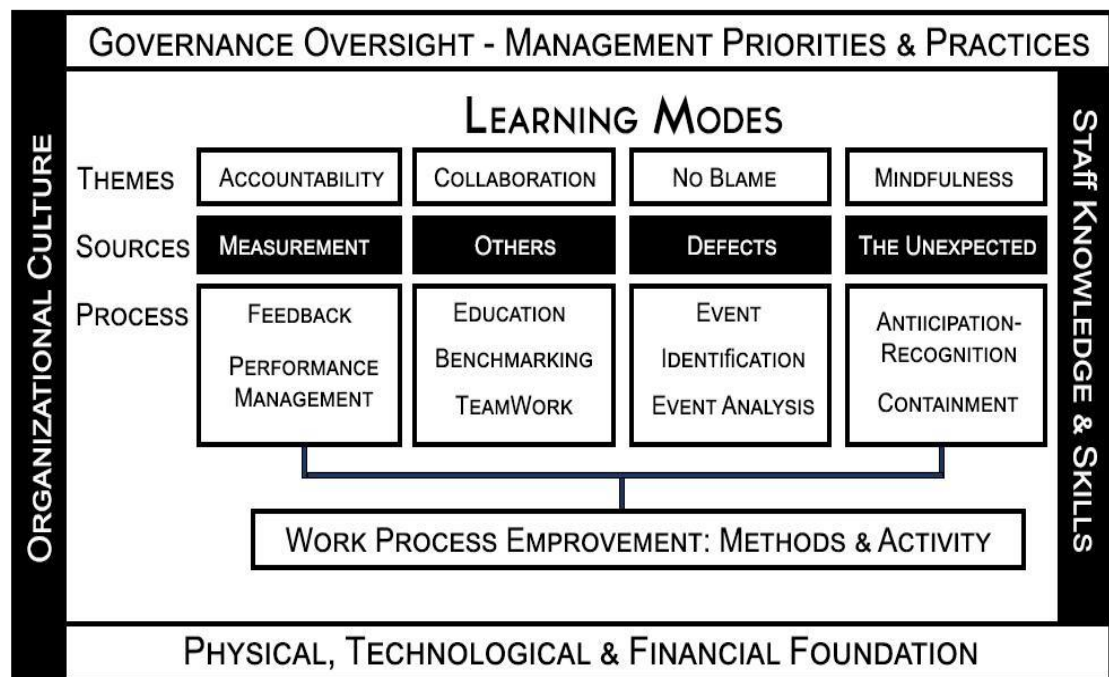
Next, the postulate of no blame for human error persists in being sacrosanct, but is challenging to withhold on a day-to-day basis. Defects are often a part of the system and are occasionally due to the mistakes of specific workers. With respect to the healthcare industry, clinicians are often invariably aware when a patient undergoes an adverse event, but are too often unwilling to report it as they are afraid of retaliation and the resulting consequences.

Concerning the third mode of organizational learning, i.e. accountability, it has been said that healthcare organizations struggled a great deal to enhance clinical performance by learning from measurement, most visibly concerning unprofessional behaviour (Hickson et al. 2007) and with regards to the disagreement with widely accepted safety-related practices (Wachter and Pronovost 2009). Much progress has been witnessed in the area of procedural outcomes, especially where there had been mandated reporting.

Finally, the fourth mode, i.e. the theme of mindfulness of the unexpected, appeared from studies related to the identification of the factors that promoted high reliability and safety in intricate, changing, risk-prone environments (Weick and Sutcliffe 2001). It consolidates the systematic chase of quality improvement with continuous vigilance for the unexpected. The skill of managing the unexpected well is underdeveloped, primarily because it demands a counterintuitive act, implying a strong response to a weak signal. Resilience, a key feature of high reliability organizations, is denoted as the capability to identify, restrain, and repel from errors as and when they arise. Considering the increasing rate of adverse events and their impact on humans, resilience is required both at the level of an individual and an organization.

The four organizational learning modes and the four themes within a four-system context are interdependent with each other. In other words, none succeeds unless all succeed. The four modes of learning influence patient safety into the final shared pathway of process improvement, whether at the organizational level, microsystem level, or at the level of individual work habits. Healthcare systems

have been able to achieve increasing eloquence and finesse with process improvement methods employed over the past decade (Edwards 2017).



**Figure 5.2 Patient safety improvement framework**

Source: Edwards, 2017: p.150

### 5.3.1.3 Singer Model

The conceptual framework built by Singer et al. (2015) as presented below (Figure 5.3) focuses on the role of collective learning as the foundation on which healthcare organizations can achieve quality and safety improvements.

This conceptual framework linked quality and safety improvements with collective learning that describes collective learning in terms of three building blocks: learning processes and practices, a supportive learning environment, and leadership and management that reinforces learning. These were originally developed by Garvin et al. (2008). Singer et al. (2015) suggest that each of the three building blocks that form the organizational learning process, support the improvement of safety.

Organizational learning and patient safety culture was addressed by Singer et al. (2015) who promoted the learning theory that leadership, environment, and processes combine to provide conditions that promote learning. Supportive

learning environments demonstrate certain characteristics, such as an appreciation of differences, openness to new ideas, social motivation, and psychological safety. One crucial premise is that leadership promotes learning. Like others, these authors also point to the opportunity to learn from failures and mistakes. Also, Singer et al. (2015) argue that learning for improvements in quality and safety includes experimentation within safe ways to experiment.

In their review, Singer et al. (2015: p.93) stated they had learned there were four types of learning processes and practices that emerged. One is:

“experimentation to develop and test new ways of doing things; acquisition of knowledge from experts, customers, and the organization’s own experience; monitoring and comparing performance data; and training to develop workers’ skills”

Singer et al. (2015) state that learning from failure is a different form of experimentation because it allows organizations to improve quality and safety based on their own failures and mistakes. Based on their review of one empirical study of learning from failure in healthcare set in nursing homes (Chuang and Baum 2003), it was found that different departments learned from their own shortcomings as well as from the failures of others, but learned less when they had made an investment in a failing strategy in the past. A related study discussed by Rerup and Feldman (2011) characterized trial and error learning as a process by which shared assumptions and values become associated with organizational routines over time. This presents that the type of learning procedure used in organizational learning needs to fit the environment. Part of the learning environment is the use of teams; there are at least three levels of analysis related to teams:

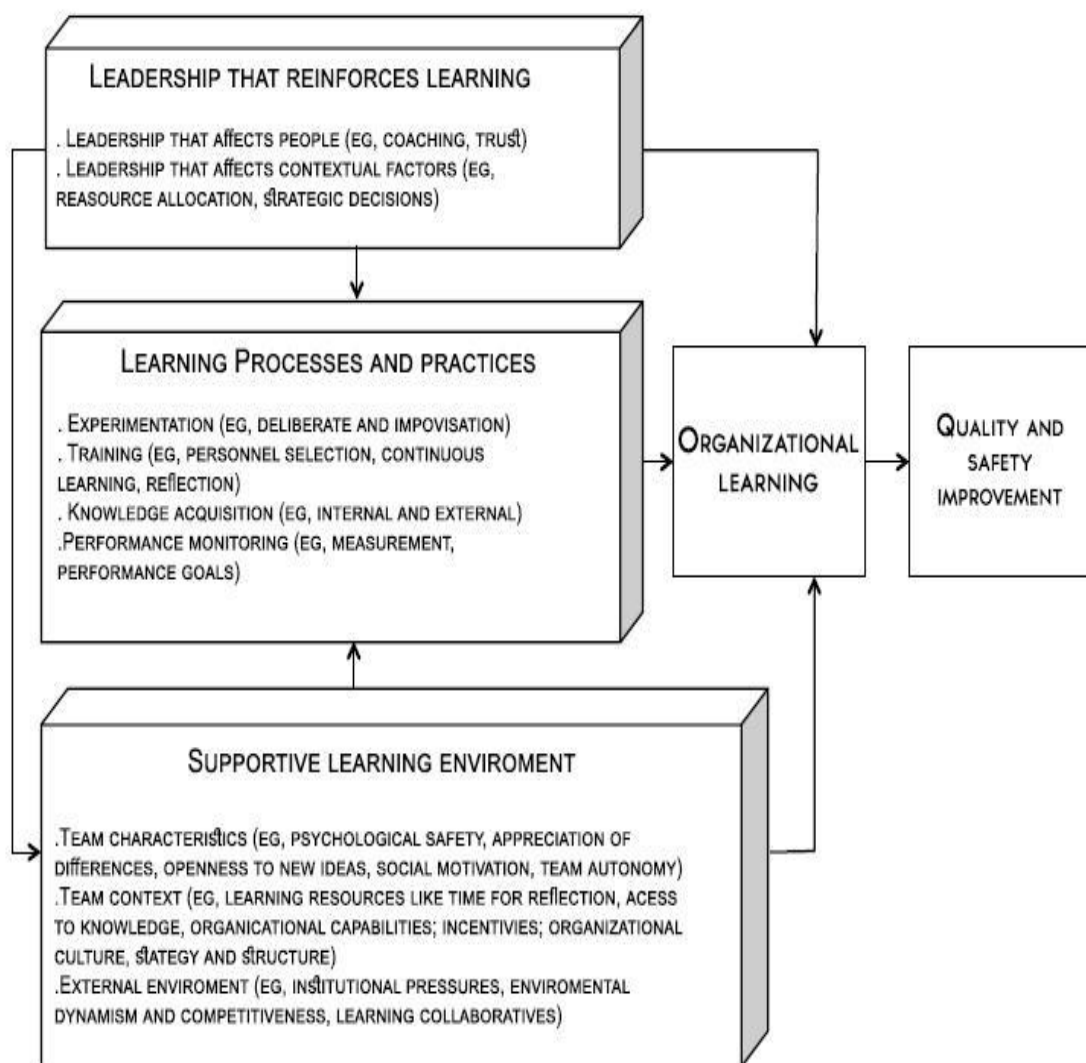
- characteristics, which are those things that influence organizational learning. Psychological safety is one of the important components of effective teams
- a second characteristic, according to Singer et al. (2015), which is the organizational team context, which reflects the norms and practices of the larger organization in which the team operates
- the third level is the external environment, which includes all external forces that may or may not be supportive (Singer et al. 2015)

Leadership affects all of these: it is the key to organizational learning and patient safety.

The review conducted by Singer et al. (2015: p. 103) expanded the:

“conceptual framework of organizational learning by including and exploring the role of institutional pressures, competitiveness, environmental dynamism, and learning collaborative for organizational learning in the context of quality and safety improvement”.

Their research promotes the theory that organizational learning and patient safety are related to each other.



**Figure 5.3 Conceptual model: how learning impacts quality and safety improvement**

Source: Singer et al, 2015: p.104

### 5.3.2 Conceptual Framework Model to Research

The conceptual framework of this study, as shown below in Figure 5.4, has been built drawing from existing conceptual frameworks in this research, empirical studies and theoretical design. It displays the research questions and proposes some potential relationships between organizational learning and patient safety culture, and their dimensions in the context of private and public hospital pharmacies. Therefore, this conceptual framework serves to guide further research in this area.

As indicated earlier, there is a strong argument in the literature that organizational learning affects patient safety culture (Carroll and Edmondson 2002; Rivard et al. 2006; Øvretveit 2009; Goh et al. 2013; Ghobashi et al. 2014; Singer et al. 2015). In addition, literature has stipulated that leadership and management are strongly associated with improving safety culture and safety outcomes (Mohr 2005; Goh et al. 2013; Singer and Vogus 2013; Singer et al. 2015). To date, there are piecemeal frameworks that link organizational learning to patient safety culture and their dimensions in private and public hospital pharmacy settings. However, we believe a more integrated conceptual framework is necessary as patient safety is a macro-level outcome that is strongly promoted by underlying micro-level dimensions of organizational learning.

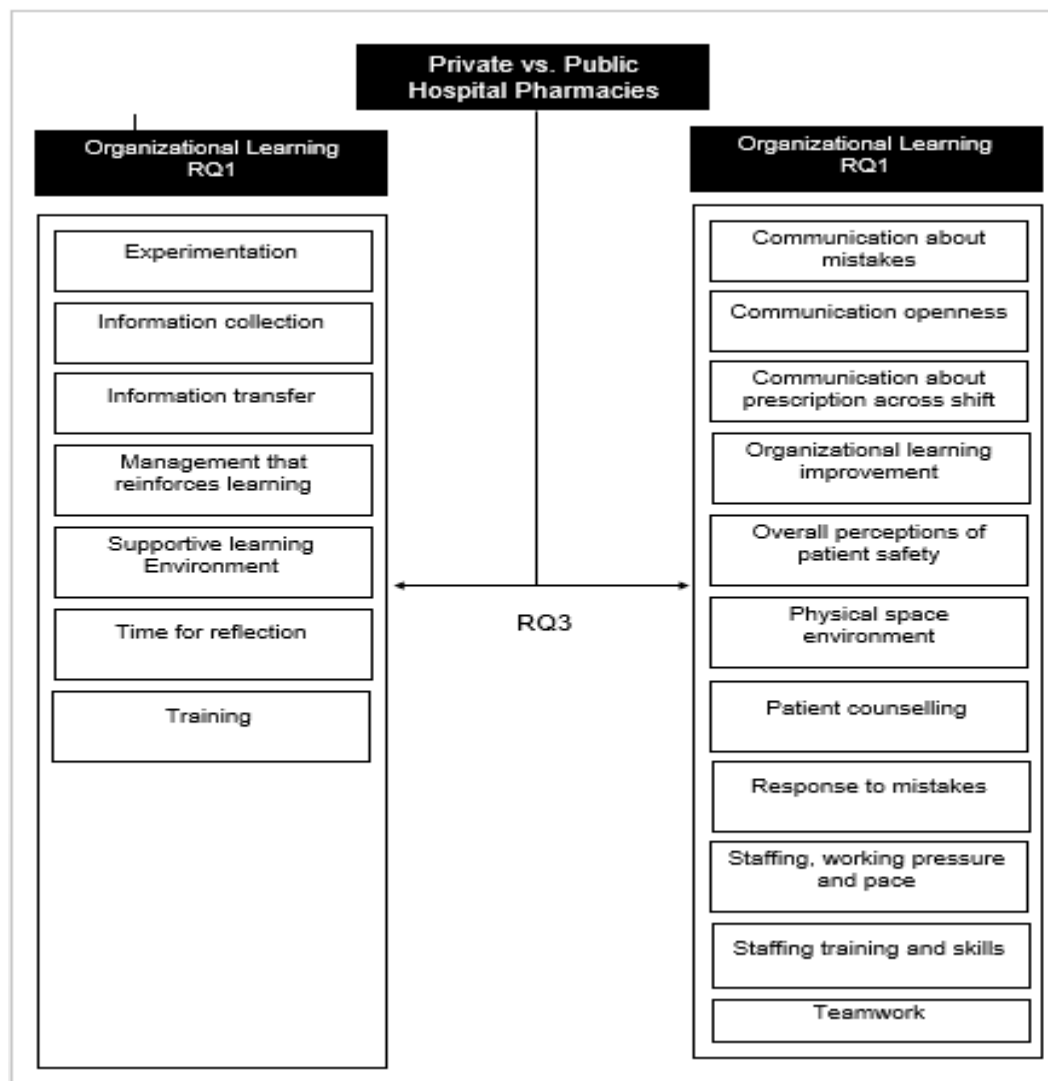
The framework assumes a potential relationship between organizational learning and patient safety culture, and their sub-dimensions in the context of private and public hospital pharmacies. More specific, the framework proposed that organizational learning dimensions, determined by **LOS-27** which includes expectation, information transfer, information collection, management that reinforces learning, supportive learning environment, time for reflection and training directly influence and promote dimensions of pharmacy patient safety culture, determined by **PSOPSC** which includes communication about mistakes, communication openness, communication about prescription across shift, organizational learning, overall perceptions of patient safety, physical space environment, patient counseling, response to mistakes, staffing, working presser and pace, staffing training and skills and teamwork.



The relationships between the two concepts and their dimensions in this conceptual framework need to be examined systematically. By an empirical examination of the conceptual framework, the study will add new knowledge by identifying which dimensions of organizational learning impact which dimensions of pharmacy patient safety culture. This approach will enable practitioners and researchers to identify the drivers for improving patient safety culture based on organizational learning, and in this way highlights the areas in need of improvement. In addition, testing the conceptual framework provides in-depth knowledge of the views of pharmacy staff regarding the specific application of organizational learning in support of patient safety culture in hospital pharmacy settings.

The conceptual framework developed in this study has been partially adapted from Singer et al.'s (2015), rendering it a modified model. The major differences are as follows:

1. Where Singers' model is based on the ability of collective learning with a focus on organizational learning (three building blocks) in the promotion of patient safety, the conceptual model developed in this study is aimed at determining the ways through which organizational learning promotes patient safety culture. It highlights the association between the dimensions of organizational learning and the dimensions of patient safety culture in hospital pharmacy settings. In addition, the conceptual model developed in this study takes into consideration the perceptions of pharmacy staff on organizational learning and patient safety culture in private and public hospital settings.
2. The conceptual framework developed in this study will be applied in the context of Arabia. The adopted questionnaires have been translated and validated in an Arabic context. The questionnaires are the LOS-27 developed by Singer et al. (2012), and the PSOPSC developed by AHRQ (2012).



**Figure 5.4 Conceptual framework of the research**

Source: Devised by author

According to this conceptual framework, the research questions investigated would be:

1. To what extent the translated Arabic version of the LOS-27 is a reliable and valid instrument to be used in the Arab context?
2. To what extent the translated Arabic version of the PSOPSC is a reliable and valid instrument to be used in the Arab context?
3. Does organizational learning influence patient safety culture in private and public hospital pharmacies in Kuwait, and which specific dimensions of organizational learning significantly influence which specific dimensions of pharmacy patient safety culture?

The developed conceptual framework seeks to answer these research questions as it is concerned with presenting the associations between organizational learning and pharmacy patient safety culture in the context of Arabia. LOS 27 and PSOPSC survey questionnaires have been translated and validated for the purpose of this conceptual research, and the applicability of these in the Arabic context has been validated by surveying private and public pharmacies in Arabia to assist in differentiation as a part of development of this framework. As presented in Figure 5.4, this study attempts to compare and bring out associations between various dimensions of organizational learning and patient safety culture separately. It does this by differentiating the practices in public and private hospital pharmacies that links to the last research question of this research, i.e. to probe whether or not organizational learning influences patient safety culture in private and public hospital pharmacies in Kuwait. Hence, the conceptual framework developed as a part of this study is in line with the research questions it seeks to answer.

#### **5.4 CHAPTER SUMMARY**

The chapter presented above attempted to introduce the readers to the association between organizational learning and patient safety culture that has been previously presented in the literature chapters. The chapter briefed the readers on the concept of organizational learning and the various empirical studies, models and theories developed in this context by various authors. The chapter began with explaining the relationship between organizational learning and patient safety culture as presented in the existing literature: this is also one of the research questions for the present study.

For ease of understanding, the theories based on the said concepts whose association is being probed were explained, i.e. the various theories that have been developed on organizational learning, patient safety culture and their linkage have been presented. In addition, a section consisting of the literature comparing and listing empirically tested studies on the variables under study were presented in this chapter to enable readers to obtain a better grasp of the concepts by highlighting what has been proven with respect to the different dimensions of organizational learning and patient safety.

Next, the conceptual framework was explained with a detailed section outlining the conceptual framework, what it does, what it serves and how it is formulated. Following this, the various conceptual models that have been developed by various authors covering the variables of this research were presented, together with a comprehensive explanation of certain popular and highly acknowledged conceptual frameworks developed in the past.

The conceptual models discussed in great detail are the Goh model, Edwards model and the Singer model. These models were presented in detail with respect to the dimensions covered and the function of each dimension towards process improvement in terms of organizational learning and patient safety. This was for ease of highlighting the findings of the models that can be used as inputs in the final step, i.e. the development of a conceptual model for this study.

Finally, the chapter explained the conceptual model developed in the context of the present study, its dimensions, where it draws from, and the ways in which this study is different from prior research work and models in this area. The chapter was concluded by outlining the relevance of the present conceptual model and how this is associated with the research questions that the present study seeks to remediate.

## PART THREE

### METHOD CHAPTERS

In the third part of the thesis, the methodological foundation and research design of the present study have been highlighted. The purpose of this section is to offer clarity about the principal theoretical suppositions, applied theories, research methods and research design. This study evaluates the perceptions and views of pharmacy staff relating to both the concepts of organizational learning and pharmacy patient safety. The cross-sectional survey consisting of an Arabic version of LOS-27 and PSOPSC surveys were employed. The application of LOS-27 and PSOPSC surveys in Kuwait provides the study with findings about integrating organizational learning into pharmacy settings. Further, pharmacy staff participating in applying the LOS-27 and PSOPSC surveys gained insights into their knowledge of patient safety culture and their significant role in maintaining it. This part includes Chapters 6 and 7 as follows:

**Chapter 6:** *Research design* describes the research gap that is present in the current study. The chapter cites the aims and objectives of the existing study, from which the specific research questions for the study, which have also been stated, were developed. This chapter portrays the ontological and epistemological assumptions, research paradigm, research approach and research design. The study adopts the positivism paradigm to conduct the research, using a cross-sectional survey design with an innovative approach by administering both survey methods, PSOPSC and LOS-27. Further, a deductive approach has been selected to study and compare the results of two surveys, i.e. LOS-27 vs. PSOPSC, administered to the same participants to deduce the outcomes. Also, exploratory and descriptive research designs have been adopted as the study is grounded on a review of the relevant literature for the purpose of finding appropriate instruments for data collection.

**Chapter 7:** *Research method* describes the data collection and the data analysis methods adopted in the current study. The chapter also addresses the validity and reliability of the research using a cross-sectional survey design consisting of the PSOPSC and LOS-27 surveys. Further, the specific details as to how the

research methods have been applied are provided. The chapter includes details on the selected population of the study, the sample, data collection methods, data interpretation and analysis methods. The ethical considerations of this research study, and validity and reliability of research are discussed and clarified in this chapter.

## **CHAPTER 6**

### **6 RESEARCH DESIGN**

#### **6.1 INTRODUCTION**

The research design and rationale for this study reflect the complex nature of the research problem and the need to evaluate views from varied perspectives. To assess the link between organizational learning dimensions and patient safety culture dimensions in private and public hospital pharmacy settings, it was necessary to evaluate the perceptions and views of pharmacy staff relating to both concepts of organizational learning and pharmacy patient safety. Additionally, it is investigated if a higher organizational learning is followed by a higher patient safety culture.

This chapter opens with a discussion on research gaps, and will attempt to explain where this study fits in. It discusses the aims and objectives of the existing study, from which the specific research questions for the study were derived before focussing heavily upon the philosophical approach informing the methodology that was adopted to carry out the research.

#### **6.2 RESEARCH GAPS**

The need for improvement, adaptation, and change in the healthcare industry has encouraged the development of only a few instruments that enable practitioners or researchers to evaluate the performance of healthcare organizations as learning organizations (Singer et al. 2012). Therefore, there exists a significant challenge associated with identifying the appropriate ways of measuring the performance of healthcare organizations in a way that allows assessment of the change in the different elements within organizational learning (Singer et al. 2015). A reliable, valid, and brief organizational learning instrument is required. The instrument would aid in the diagnosis of learning problems, their treatments aimed at promoting organizational learning, and the strategies that can enhance learning capabilities (Singer et al. 2012).

Existing studies have focused on the importance of reporting safety related events to healthcare providers (Singer et al. 2015; Edwards 2017), but there is a

lack of emphasis on the definition and classification of events that affect a pharmacy's ability to learn from its experience. Although several popular instruments have assessed patient safety culture in hospital and primary care settings (Nieva and Sorra 2003; Singer et al. 2009b), few have focused on patient safety culture in pharmacy settings (Nie et al. 2013). The literature is replete with examples of successful quality and safety improvement initiatives in all types of hospitals (Vassalou 2001; Eisenlohr et al. 2002; Mohr 2005; Sorra and Dyer 2010; Halligan and Zecevic 2011; Westat R 2012; Singer and Vogus 2013); however, most examples are infrequently replicated, ignoring the subject of hospital pharmacies.

The conceptual frameworks and models that contribute to organizational learning in a hospital pharmacy setting for promoting and improving patient safety culture are inadequate. Also, although the PSOPSC has been developed to assess the opinions of pharmacy staff regarding the patient safety culture in their pharmacies, it has been translated into only a few languages, such as Chinese and Urdu. The Arabic translation of PSOPSC is yet to be made available (AHRQ 2014). Thus, amidst the presence of numerous theories and models on patient safety culture in hospitals, there is a need for research highlighting a reliable and valid Arabic version of an instrument that measures organizational learning and patient safety culture in hospital pharmacy settings, further relating stakeholder identification of common dimensions of organizational learning that promote patient safety culture in hospital pharmacy settings. The views and perceptions of hospital pharmacy staff about organizational learning and patient safety culture require attention, and the addition of an Arabic instrument would voice the opinions of hospital pharmacy staff in that region.

An instrument considered appropriate for improvements in patient safety entails organizational learning at the system level. This necessitates modifications in organizational routines that traverse various groups, professions, and hierarchical structure (Rivard et al. 2006). Goh et al. (2013) suggest that enhancement of patient safety culture is the result of adequate individual and organizational learning that prioritizes patient safety, and tolerates individuals who make mistakes, instead of applying blame culture (Goh et al. 2013). Existing research indicates support for organizational learning as a part of patient safety



culture development (Firth-Cozens 2001; Nieva and Sorra 2003; Ashcroft et al. 2005); however, there is a lack of research that determines stakeholders' association of common dimensions of organizational learning and patient safety culture paradigms and their application to specific measures to prevent risks and reduce errors or injuries in the hospital pharmacy settings. Further, although the dimensions of organizational learning that contribute to the dimensions of patient safety culture have been determined, it remains to be established within hospital pharmacy settings. As suggested by Aboneh et al. (2017), the aspect of patient safety is a 'blind spot' for pharmacies as there is evidence that pharmacies rate their approach to safety as 'good', even if they do not engage in organizational risk management or explore potential or actual errors. Thus, pharmacists require awareness and knowledge about the patient safety culture; there is a need to delineate the relationship between the different dimensions of pharmacy patient safety culture and organizational learning.

In addition, the patient safety culture, or rather, improvements that need to be undertaken for the patient safety culture with intense focus on the dimensions of organizational learning in healthcare centres, (especially hospital pharmacies in Kuwaiti healthcare organizations), is yet to be at the centre of studies (Ali et al. 2018; Alqattan et al. 2018). The existing frameworks for improved safety at a few hospital pharmacies might be effective, but the present study will determine this through the reflection of staff through assessments of their views in the specific private and public hospital pharmacy settings in Kuwait. Further, the study will add to existing knowledge and assist in the development of patient safety culture measures through the integration of staff views that may be incorporated into process improvements.

### **6.3 OVERALL AIM**

The aim of the current study is to translate the LOS-27 and PSOPSC into the Arabic language and assess the reliability and validity of a translated Arabic version LOS-27 and PSOPSC. This includes the evaluation of staff perceptions about patient safety culture and organizational learning in public and private hospital pharmacies of Kuwait. The final aim is to explore the relationship between organizational learning and patient safety culture in hospital pharmacy

settings operationalized by the LOS-27 and PSPOSC instruments, and to further explore how dimensions of organizational learning relate to dimensions of pharmacy patient safety culture. Also, to assess if there are statistically significant differences between the private and the public hospital pharmacies.

#### **6.4 OBJECTIVES**

1. To translate the LOS-27 into Arabic language, to assess the reliability and validity of a translated Arabic version of the LOS-27, and to use this to evaluate staff perceptions about the organizational learning process in public and private Kuwaiti hospital pharmacies.
2. To translate the PSOPSC into Arabic language, to assess the reliability and validity of a translated Arabic language version of the PSOPSC released by the United States Agency for Healthcare Research and Quality (AHRQ) in 2012, and to use this to evaluate staff perceptions of patient safety culture in public and private Kuwaiti hospital pharmacies.
3. To explore the relationship between organizational learning and patient safety in hospital pharmacy settings as determined by LOS-27 and PSPOSC instruments, and to further explore how dimensions of organizational learning relate to dimensions of pharmacy patient safety culture.
4. To evaluate the strengths and weaknesses of patient safety culture in public and private hospital pharmacies, and indicate the areas that need further improvement in both private and public hospital pharmacies in Kuwait.

The first objective was investigated in Study I, the second objective in Study II, and the third and fourth objectives in Study III.

**Study I** aimed to assess the reliability and validity of a translated Arabic language version of LOS-27 and to use this to evaluate staff perceptions of patient safety culture in Kuwaiti hospital pharmacies.

**Study II** aimed to assess the reliability and validity of a translated Arabic language version of PSOPSC released by the United States Agency for Healthcare Research and Quality (AHRQ) in 2012 and to use this to evaluate staff perceptions about the organizational learning process in Kuwaiti hospital pharmacies.

**Study III** aimed to explore the relationship between organizational learning and patient safety culture in hospital pharmacy settings as determined by the LOS-27 and PSPOSC instruments, and to further explore how dimensions of organizational learning relate to dimensions of pharmacy patient safety culture.

## **6.5 RESEARCH QUESTIONS**

In order to achieve the objectives previously presented, three research questions for this thesis have been developed.

1. To what extent the translated Arabic version of the LOS-27 is a reliable and valid instrument to be used in the Arab context?
2. To what extent the translated Arabic version of the PSOPSC is a reliable and valid instrument to be used in the Arab context?
3. Does organizational learning influence patient safety culture in private and public hospital pharmacies of Kuwait, and which specific dimensions of organizational learning significantly influence which specific dimensions of pharmacy patient safety culture?

## **6.6 RESEARCH PARADIGM**

Research paradigm is a structured pattern; a framework of systematically arranged scientific and theoretical philosophies, principles, concepts, and hypotheses that are highlighted in order to tackle the study methodically (Vaishnavi and Kuechler 2015).

Saunders et al. (2009: p.124) define the research philosophy as "a system of beliefs and assumptions about the development of knowledge". Therefore, the research philosophy is what the researcher is doing precisely when starting on research: developing knowledge in a specific field. The researcher makes a number of types of assumptions at every stage in his research. These assumptions about human knowledge (epistemological assumptions) and about the nature of reality (ontological assumptions) (Saunders et al. 2009).

Ontology is the study of 'being' and is concerned with 'what is'; that is, the nature of existence and structure of reality (Snape and Spencer 2003). Ontology is defined as

"a concept concerned with the existence of, and relationship between, different aspects of society such as social actors, cultural norms and social structures. Ontological issues are concerned with questions pertaining to the kinds of things that exist within society" (Jupp 2006).

The types of ontology include the interpretivism and constructionism approaches; these contend that learning is produced by discovering and understanding the

social world of the people being studied, concentrating on their meaning and interpretations, with the understanding that meanings are socially constructed by social actors in a particular context (Ormston et al. 2014). After carrying out the research, it is assumed by the researcher that organizational learning is an essential factor that contributes towards the development of patient safety culture at hospital pharmacies in Kuwait.

Epistemology relates to assumptions about the kind, or the nature of learning (Richards 2003), or how learning about the world is possible (Snape and Spencer 2003). Epistemology is the way of viewing the world and perceiving it which involves knowledge and embodies an understanding of what that knowledge entails (Crotty 1998). Bryman and Bell (2011: p.13) define epistemology as “an issue [that] concerns the question of what is (or should be) regarded as acceptable knowledge in a discipline”. Positivism is an epistemological position that focuses on the importance of objectivity and evidence in exploring the truth when the world is unaffected by the researcher. Also, in positivism, facts and values are very distinct, making it possible to conduct objective and value-free inquiry (Snape and Spencer 2003). At the end of the study, it was found that organizational learning is indeed a direct contributor towards the development of patient safety culture at hospital pharmacies in Kuwait.

### **6.6.1 Positivism**

Positivism is a research paradigm that takes the path of experimentation and quantitative analysis in order to discover relationships in the data as expressed in the hypotheses. In this particular approach, the researcher looks for logical observation and theories supporting the investigation. Hence, the positivist approaches the research with the belief that a unique and objectively certain outcome of the research undertaken exists (Gable 1994). The assumptions that are reflected in Positivism are based on the notion of mind-independent reality; that is, the physical world and social phenomena are similar in that researchers can study social events as physical events (Kim 2003).

### **6.6.2 Interpretivism**

In contrast to the positivism paradigm of the objective path, the interpretivism paradigm carries out the research with a very subjective context. Interpretivism

accounts its derivation to the word 'interpretations', and interpretivist researchers believe that the concept of research necessitates the perspective of humans or people; they look for subjective ideas and themes in the research. In interpretivism, every research has a unique take and rejects the idea that one theory fits all research (Fellows and Liu, 2015). The objectivist approach is the assumption that an objective reality exists that can be analysed and understood through the accumulation of more information. This is opposed to the subjectivist approach that states that the mental activity of a person is the only way to describe a person's experience, instead of any external or objective truth.

### **6.6.3 Research Paradigm Adopted**

This study is based in Kuwait and is undertaken to validate the Arabic version of LOS-27 and PSOPSC. It also examines the nature of the relationship between the organizational learning process and patient safety culture within public and private hospital pharmacies. Here, organizational learning is the point of focus to improve patient safety culture. Therefore, the current study has adopted the positivism paradigm, since the objectives of the research are clear and the researcher would come to conclusions based on the findings, and not his own interpretations.

The positivism paradigm is fitting to the current study as the method adheres to knowledge that is factual, gained through observations and measurements. Interpreting through an objective approach, the research findings are quantifiable and observable. The positivism approach highlights that the researcher should concentrate on facts. Kim (2003: p.11) asserts that:

“one of the main goals of using positivism in organization learning research settings is to achieve valid and reliable knowledge as a set of universal principles that can explain, predict and control human behaviour across individuals and organization”.

Positivism adheres to the understanding that only “factual” knowledge that is accumulated through observations and measurement is trustworthy (Dudovskiy 2016). Clarke (2009) states that positivism attempts to discover the truth by connecting independent events in reality with the assistance of valid cognition; it

is a settlement with the belief that there is a distinctive association between the various activities that occur.

The positivist approach is achieved with the help of experiments, observations, collection and analysis of data which are based on quantitative estimation. These components assist in deducing the relationship between the variables, collecting information, and testing the hypotheses on this basis. This approach will be useful in ascertaining the relationship between organizational learning and patient safety culture in hospital pharmacy settings. Further, researchers who adopt positivism follow the statistical approach for the analysis of data (Yanow and Schwartz-Shea 2015). Thus, the positivism approach will be utilized for the logical and scientific accuracy of the data.

The data for the current study were accumulated by administering quantitative questionnaires. In following the positivism method, the researcher carried out the research by means of a questionnaire survey, using a cross-sectional survey design with an innovative approach by administering both survey methods, PSOPSC and LOS-27, at the same time. The positivist paradigm affirms that real events can be perceived empirically and described with logical study. The questionnaire survey in this study supports the principle of the positivism method, that science is not equal to common sense. Namely, the common sense of the researcher must not bias the research findings. By developing the questionnaire, the information pertaining to the study is gathered from different respondents, relating to the field of the study and unaffected by any bias from the researcher.

## **6.7 RESEARCH APPROACH**

The research approach is a vital element in any investigative undertaking, because it provides the essential investigation map of how the research is planned. It can be considered as the fundamental link that associates the primary evidence and conventions in the research study to the conceptual framework, thereby leading to the data collection stage. The research approach is either inductive or deductive. The inductive research approach works from analysing specific observations to broader generalizations and theories. Informally, it is termed as a “bottom-up” approach. This approach involves a degree of

uncertainty. The deductive research approach, and the approach chosen for this research, works from a general view to a more specific one: it is also called a “top-down” approach (Saunders et al. 2009)

#### **6.7.1 Research Approach Adopted**

The conceptual framework of the research has already been laid out. It can be easily seen that the research has a clearly defined set of research variables, namely organizational learning and patient safety culture, and this research is an attempt to test the relationship between these variables. This research adopts a deductive approach to research and will study and compare the results of two surveys, i.e. LOS-27 vs. PSOPSC, administered on the same participants in order to deduce the outcomes.

By implementing a deductive approach, the study aims to examine the nature of the relationship between the organizational learning process and patient safety culture within public and private hospital pharmacies in Kuwait, together with identifying the areas for improvement in their patient safety culture, with an intense focus on organizational learning.

### **6.8 RESEARCH DESIGN**

Scientifically, a research undertaking follows a set pattern of steps for the progress of the investigation. Research design refers to the fundamental blueprint or the architectural outline of the research, which is essentially laid down in the initial stages of the study. It can be thought of as the overall style of the research and helps in maintaining the logical flow of the research. There are three broad categories of research design, viz. descriptive, exploratory and explanatory (Creswell and Clark 2007). It must be noted that these three categories are not mutually exclusive, and a researcher considering the topic and data type of his research may adopt one or more to facilitate his research study (Lewis 2015). The choice of research design is made by the researcher, keeping in mind the subject and the area of his research (Walliman 2011).

### **6.8.1 Exploratory Research Design**

The exploratory research design takes the course of exploration in order to gain better insight into the meaning and structure of the research topic. In this sort of research, the initial stage is to find the primary issues and the fundamental variables of the research study; it is an attempt by the researcher to understand a social phenomenon by exploration. The concept of exploratory research design follows a path involving, first, an exhaustive literature review. Thus, in many cases, exploratory research is the first step of the descriptive and/or explanatory studies. The essential concept of undertaking an exploratory research design is to look for novel themes on the same research problem without giving definitive conclusions (Ariga et al. 2007).

### **6.8.2 Explanatory Research Design**

Explanatory research is defined as an attempt to connect ideas to understand cause and effect, meaning researchers want to explain what is going on and to test theories (Akhtar 2016). Explanatory research focuses on answering the 'why' questions; this involves developing causal explanations. This type of design is common in fields with a quantitative orientation, but it presents challenges of identifying the quantitative results to further explore the unequal sample sizes for each phase of the study (Creswell and Clark 2007).

### **6.8.3 Descriptive Research Design**

Descriptive design describes phenomena as they exist. It is used to determine and acquire information on a characteristic of a particular population (Shuttleworth 2008). Also, it does not answer questions about when/how/why the characteristics occurred. Rather, it addresses the 'what' question (ie. what are the characteristics of the population or situation being studied). It is widely used in physical and natural science, but it is used more commonly in the social sciences, as in socio-economic surveys, and job and activity analysis (Kothari 2004).

### **6.8.4 Research Design Adopted**

This research is undertaken to examine the implications and relationship between organizational learning and patient safety culture in hospital pharmacy settings



and their dimensions. In other words, the variables of the research were predefined and the research questions were constructed after extensive study of the literature. This study is mainly a mix of explanatory research because it explained the relationship between organizational learning and patient safety culture in hospital pharmacy settings, and assumed a pre-formulated causal relationship that was tested in the empirical and exploratory research. This was because it explored in depth what dimensions of organizational learning drive what dimensions of patient safety culture. The study also adopted a descriptive research design because it was based on a review of the relevant literature for the purpose of finding appropriate instruments for data collection. This is in addition to mean, standard deviation, kurtosis, skewness; the positive response rate of items and dimensions have been calculated. Here, the researcher took the best features from different research designs in order for the investigation to proceed in the best possible manner.

## **6.9 TIME DIMENSION IN RESEARCH STUDIES**

In their studies, a researcher defines a time frame for the undertaking of their investigation. The types and details of time frames are listed below.

### **6.9.1 Cross-Sectional Research**

A cross-sectional study is one that is done at a single point in time. In other words, the data collected correspond to respondents' views that are gathered at a single point in the scale of time (it may be days, weeks or even months, but they are considered as the same point of time). This type of time frame gives an idea of a variety of elements at one single point of time, and does not give the idea of trends over time.

### **6.9.2 Longitudinal Research**

A longitudinal research study is done to attain an idea of a parameter over multiple points on the time scale and is not done in a single shot. Here, the observations are displaced in time and are usually undertaken to answer questions such as the trends in a study, a cohort study or a panel study. For the purpose of such studies, data collection can extend from the past into the future. When compared to cross-sectional studies, a longitudinal study is much more

expensive in terms of time and money, but the results produced have higher accuracy in judging a causal relationship (Rindfleisch et al. 2008).

### **6.9.3 Time Dimension Adopted**

This study is aimed at determining the present-day relationship between organizational learning and patient safety culture in hospital pharmacy settings, and does not give the trends over time. Thus, a single shot data collection is enough for judging the relationship. This study therefore adopted a cross-sectional time frame that would have reasonable accuracy and be cost-effective. A longitudinal time frame adoption might yield some extra accuracy in the results, but would be unnecessarily more costly, and hence was avoided in this case.

### **6.10 SUMMARY**

The current chapter established the research gap pertaining to the study by highlighting the inadequacy of the existing research on the appraisal of the use of organizational learning in the development of patient safety culture in hospital pharmacy settings. There is a lack of a universally accepted model of patient safety culture that has been investigated by organizational learning researchers, although many studies have set out to examine it. Some studies have included relationships with organizational learning, such as with organizational culture, leadership, or as dimensions of organizational learning, while other researchers have suggested that they believed them to be independent constructs.

This chapter emphasized the need to address organizational learning as an antecedent and indicator of patient safety culture by stating the research objectives and research questions. It has also reviewed the methodological approach chosen for this study and described the research setting; this includes the research paradigm, approach and design. The study adopted the positivism paradigm to conduct the research using a cross-sectional survey design with an innovative approach by administering both survey methods, PSOPSC and LOS-27. Further, a deductive approach was selected to study and compare the results of two surveys, i.e. LOS-27 vs. PSOPSC, administered to the same participants to deduce the outcomes. Also, exploratory, explanatory and descriptive research

designs were adopted as the study is grounded on a review of the relevant literature for the purpose of finding appropriate instruments for data collection.

The next chapter will discuss the way data were collected and analysed.

## **CHAPTER 7**

### **7 RESEARCH METHOD**

#### **7.1 INTRODUCTION**

A research method is a technique for gathering data. It can include a specific instrument, such as a self-completion questionnaire, an interview schedule, or an observation whereby the researcher listens and watches others (Bryman and Bell 2011).

All research starts with the formulation of the research problem. To proceed with the undertaking and arrive at a solution, there is a scientific and systematic way that is known as a research methodology (Ghauri and Grønhaug 2005). Research methodology is essentially a detailed explanation and description of various logical steps followed by the researcher to smoothly take on the course of the research (Blaikie 2009).

It is the role of a researcher to be aware of various techniques/methods and methodologies that facilitate an organized sequence of investigation. Subsequently, a research scientist undertakes a detailed study about the various approaches and research styles that could be adopted in the research. He then chooses a method in his research depending on the topic and circumstances of the research (Johnson and Onwuegbuzie 2004).

The significance of research methodology is that it helps define clear boundaries that delimit the process undertaken for an investigation. This is an important step because any and all the research undertaken has limitations of time, disposable cash and resources at hand. To take care that the researcher does not exceed his limited resources, and that the course of research is smooth, proper preparation and planning is required. The study of research methodology is essential as it draws boundaries limiting the reach of the research. Thus, by defining the research methodology, a researcher optimizes the use of resource expenditure (effort, time, money) and the research findings. Research methodology is therefore very important to any investigation and must be laid out while conceptualizing any study (Blaxter 2010).

This chapter presents the research methodology that has been chosen as the most suitable approach for meeting the research aims, questions and objectives of the research. By outlining the research method, the researcher aims to shine a light on the instruments chosen, the target population and the sample method used. The chapter also describes the data collection method and the data analysis involved in the study. Together with the analysis of the various factors pertaining to the study, the ethical considerations also presented.

## **7.2 THE QUANTITATIVE RESEARCH APPROACH**

The current study adopts the quantitative research approach by using a questionnaire survey. As mentioned above, the research followed a cross-sectional design through administering both questionnaires, PSOPSC and LOS-27, on the same participants using a single form, as seen in Appendix A. The aim was to translate the PSOPSC and LOS-27 questionnaires into Arabic and validate the translated Arabic version of PSOPSC and LOS-27 with the evaluation of staff perceptions and views about patient safety culture and organizational learning in public and private hospital pharmacies of Kuwait; it also explored the relationship between organizational learning and patient safety culture in hospital pharmacy settings. LOS-27 was used to measure organizational learning, which is the independent variable, while PSOPSC was used to measure pharmacy patient safety culture, which is the dependent variable. It also further explored how dimensions of organizational learning relate to dimensions of pharmacy patient safety culture. The research gap pertaining to the study has not been examined previously.

### **7.2.1 Measurement Tool**

#### **7.2.1.1 Development of LOS-27**

Various scales have been developed over time to measure organizational learning. A questionnaire developed by Jerez-Gomez et al. (2005) measures organizational learning. This includes four factors: management commitment, system perspective, openness and experimentation, and transfer and integration of knowledge. Chiva et al. (2007) developed and validated a scale for measuring organizational learning capability. The organizational learning capability scale

consists of 14 items grouped into 5 dimensions: experimentation, risk taking, interaction with the external environment, dialogue, and participative decision making. Goh and Richards (1997) developed an Organizational Learning Survey (OLS) to measure learning capability in an organization. It is a 55-item questionnaire that consists of the following five dimensions:

- clarity of mission and purpose;
- leadership commitment;
- experimentation and rewards;
- transfer of knowledge; and
- teamwork and group problem solving.

Yang et al. (2004) developed the Dimensions of the Learning Organization Questionnaire (DLOQ), which consists of seven dimensions, including leadership for learning, system connection, embedded system, continuous learning, dialogue and inquiry, empowerment, and team learning.

The learning organization survey (LOS) with 55 questions represents the appropriate way of assessing learning in an organization. It was based on three building blocks that are crucial to becoming a learning organization: supportive learning environment, concrete learning processes and practices, and management or leadership that reinforces learning. Each building block includes different learning techniques, and each requires various supporting activities (Garvin et al. 2008). Subsequently, Singer et al. (2012a) modified the LOS into the learning organizational survey short-form (LOS-27) to measure the different levels of organizational learning in healthcare organizations.

The LOS-27 provides organizations with an instrument to assess the extent to which they can be seen as learning organizations and can learn from reported events.

The reasons behind using LOS-27 in this research are: presence of adequate construct validity, internal consistency as evidenced by exploratory factor analysis and confirmatory factor analysis, the short form of the instrument is easily administered in the context of research, it is used among organizations across all departments and levels of organizational hierarchy, and the

availability of benchmark data (Singer et al. 2012). In addition, the instrument offers an important tool for examining the relationship between organizational learning and patient outcomes, such as patient safety (Garvin et al. 2008). LOS-27 consists of 27 items, measuring 7 dimensions of organizational learning. Two dimensions involve environmental factors, namely supportive learning environment (seven items) and time for reflection (two items). The third dimension is management that reinforces learning (four items). The remaining four dimensions address the concert learning processes and practices, namely experimentation (four items), training (three items), information transfer (four items), and information collection (three items) (Singer et al. 2012a).

#### **7.2.1.2 Development of PSOPSC**

Limited instruments have been developed to measure patient safety culture in a pharmacy setting; the most popular have been discussed and presented in Chapter 3. However, the original PSOPSC was developed by the agency for healthcare research and quality (AHRQ) in 2012, following a pilot study that was designed to assess 11 composites of pharmacy with 36 items of patient safety culture (Westat R 2012). The logic behind selecting this instrument is that the psychometric properties of this survey were acceptable, as evidenced by item analysis, exploratory factor analysis, confirmatory factor analysis, and inter-correlation and reliability analysis (Westat 2012a). This survey was designed specifically for pharmacy staff and probed them on their views regarding the culture of patient safety in their pharmacies.

PSOPSC consists of 36 items measuring 11 dimensions. These dimensions are: communication about mistakes (three items), communication openness (three items), communication about prescription across shift (three items), teamwork (three items), organizational learning improvement (three items), overall prescription of patient safety (three items), physical space environment (three items), patient counselling (three items), response to mistake (four items), staffing, working pressure and pace (four items), and staffing training and skills (four items). The 36 items are categorized in three sections: (A) working in this pharmacy, (B) communication and work pace, and (C) patient safety and response to mistakes. The questionnaire also included three questions based on

rating the incidence of documentation of mistakes, and one question that presented an overall rating on pharmacy patient safety culture.

In addition, three questions aimed at collecting the background data were formulated; these included questions on work experience, work hours, and role of participants, which were utilized for both surveys as control variables. Characteristics of individuals and their jobs that may affect safety culture (Singer et al. 2009b). The survey has a total of 70 items.

### **7.2.2 Translation of Questionnaires**

The study was conducted in Kuwait, where English is not the native language. Therefore, the questionnaire was translated into Arabic based on the AHRQ guidance as explained below. It was noted that a successful translation should communicate the same meaning as the English version, employ language that is familiar and easily understandable to respondents considering their culture, and use correct grammar (Westat 2012b).

1. The inquiry on the availability of a translated Arabic version of PSOPSC and LOS-27 was made by sending an email to SafetyCultureSurveys@westat.com (AHRQ) and Professor Sara Singer, the principal author of the article "Development of a Short-Form Learning Organization Survey: The LOS-27". We did not find an Arabic translated version of both surveys, so the permission was obtained from AHRQ and Professor Singer to translate both surveys into Arabic based on the organization's process as seen in Appendix B.
2. An expert translator who is familiar with this type of work, was selected and asked him to prepare a draft translation based on the guidelines of AHRQ.
3. The translation was reviewed by using a bilingual reviewer and expert in the field of quality and safety, and who had been working as an associate professor. This was in order to assess the accuracy of the translation and its appropriateness (both in terms of familiar language and cultural distinctions) for the target population.



4. The Arabic version was translated back into English by a bilingual translator, facilitating comparison between both versions of the questionnaires for accuracy.
5. A pilot study was conducted to evaluate an initial, preliminary version of the translated surveys. Both versions were administered to 15 pharmacists in one of the selected hospital pharmacies to determine whether the questions were clear. Following the pilot study, some items were modified before being incorporated in the final version of the surveys as explained below. The data collected from the 15 pharmacists in the pilot study were excluded from further analysis as explained below in a separate section.
6. A field test and psychometric analyses were conducted to assess the reliability and validity of the translation and its correspondence with the English version. The Arabic version of the questionnaire is available in Appendix C.

### **7.2.3 Modifications of the Questionnaire**

In this study, the PSOPSC was modified based on the feedback obtained from the pilot study, by adding the term, “dispensing medicine” to the third question in Section C, to suit the private and public hospital pharmacies. Where the medication is provided for free in the public hospital pharmacies of Kuwait the modified question becomes "This pharmacy places more emphasis on describing or selling medicine than on patient safety". In addition, modifications were made to some words on some items from both surveys, that might cause some misunderstanding in the Arabic language (the PSOPSC, the items of “We feel rushed when processing prescriptions”, “Staff feel like their mistakes are held against them” and the last section of ‘Documenting Mistakes’ and the LOS-27, the items of "This pharmacy has forums for meeting with and learning from: Experts from outside the organization", "This pharmacy has forums for meeting with and learning from: Experts from other departments/teams/divisions" and "This pharmacy has forums for meeting with and learning from: Customers/clients").

To ensure that the analyses of both questionnaires were consistent, response options were modified by using a seven-point agreement scale (‘strongly

disagree' to 'strongly agree') or frequency scale ('never' to 'always') instead of a six-point scale. The option 'Does not apply or don't know' was deleted. Also, the response options of the LOS-27 were modified, using a seven-point frequency scale ('never' to 'always') for the leadership items instead of a five-point scale, while retaining the original seven-point accuracy scale ('highly inaccurate' to 'highly accurate') for all other items. Using seven-point Likert scales provides a more accurate measure of a participant's true assessment, optimizes reliability, and leads to stronger correlations with t-test results (Symonds 1924; Lewis 1993; Finstad 2010).

### **7.3 SAMPLING AND POPULATION**

In studies that consider the testing of hypotheses, the participants of the study should ideally be the entire population that the researcher has targeted. However, it is nearly impossible and an impractical approach to survey the exhaustive population (Salkind 2010). Hence, to make the study manageable and economical, a handful of subjects are chosen from the entire population for testing the hypotheses: this is known as sampling. Sampling can be done in various ways, for example, deliberate sampling, simple random sampling, systematic sampling, stratified sampling, quota sampling, cluster sampling, sequential sampling, convenience sampling, multistage sampling, etc. (Sim and Wright 2005). The current research adopted a convenience sampling method which is a specific type of non-probability sampling that depends on the collection of data from part of the population that is close to hand. The reasons behind selecting this sampling technique are the simplicity of sampling and the ease of research, data collection can be facilitated in a short duration of time and the cheapest to implement that alternative sampling method. On the other hand, this technique has some disadvantages such as it is prone to bias and influences that are beyond the control of the researcher and has a high level of sampling error (Saunders et al. 2009).

Convenience sampling was used to select six hospitals in Kuwait, three from the largest public hospitals (having 650-900 beds per hospital and pharmacy staff ranging from 110 to 130 in each hospital), and three from the largest private hospitals (having 150-300 beds per hospital and the pharmacy staff ranging from

25 to 35 in each hospital). All pharmacy staff members working in the pharmacy area, including the pharmacists (pharmacy managers, pharmacists in charge), pharmacy technicians, pharmacy clerks, and pharmacy students, were included in the study. Various departments, such as inpatient pharmacy, outpatient pharmacy, medical stores, and casualty pharmacy, were included to ensure that a range of perspectives on patient safety and organizational learning were obtained.

## **7.4 DATA COLLECTION**

The indispensable part of every research in any social or technical setting is the data collection. Here, the research needs contextually relevant data so that the researcher can draw his conclusions by proper investigation and analysis of that data. Any research data essentially consists of facts and perceptions. The collection of data consists of selecting relevant and appropriate data and organizing it according to the significance of the data. The major classification of data is done according to the data type and the source from which the data is collected (Hewitt-Taylor 2001).

### **7.4.1 Data Collection Method Adopted**

This study adopted a cross-sectional time frame. The self-administered questionnaires were distributed among the selected hospital pharmacies with the help of a team of volunteer pharmacists who worked with the researcher. To avoid bias, we counterbalanced the order of the two questionnaires (i.e. half of the participants were given the questionnaire consisting of LOS-27 items first, followed by the PSOPSC items, while the other half received the survey consisting of the PSOPSC items first followed by LOS-27 items). The data were collected over a period of two months (October-November 2017). Each participant was given the survey together with a pen and an envelope. Informed consent was obtained after the purpose of the study was explained to them. A cover letter was attached to the questionnaire, which included information about the purpose of the study, as well as instructions for completing and returning the questionnaire. A tracking sheet was used to identify the serial numbers from each selected hospital and to track the number of surveys handed out and returned. The tracking sheets did not include any personal identifying information.

## **7.5 PILOT STUDY**

This study employed pilot testing for early detection of any problems with the translated questionnaire. A pilot study is useful in providing groundwork for any research. For instance, researchers often make use of a common technique known as debriefing. In this method, the participants are asked to rephrase the items in the survey using their own words shortly after responding to the questions in the survey. This enables the researchers to judge whether participants fully comprehend all components of the questionnaire. Pretesting a translated questionnaire is helpful in classifying ideas or constructs that are dissimilar in a given language or culture so that the questionnaire designer, translators and other associates of the translation unit, can make significant reforms and enhancements to survey questions, thus bypassing concept prejudice (Hunt et al. 1982).

Prior to the study, a pilot study was conducted to evaluate an initial, preliminary version of the translated questionnaires. Both versions were administered to 15 pharmacists in one of the selected hospital pharmacies to determine whether the questions were clear to them. After the pilot study, some items were modified before incorporating them into the final version of the surveys, as mentioned previously such as adding the term, “dispensing medicine” to the third question in Section C, to suit the private and public hospital pharmacies. The data collected from the 15 pharmacists in the pilot study were excluded when further analysis was conducted.

## **7.6 DATA ANALYSIS**

After the collection of the required relevant data, the researcher must process and analyse the data so that the study can progress from the formulated research question to a concrete result. For the analysis of said data, it is necessary for the researcher to have an exhaustive knowledge of the available methods, the assumptions to be made in various techniques, and the criteria to select and discard certain techniques and particular procedures in the context of the investigation to be carried out. The data collected for investigation must be selected and organized such that they can answer the research questions. Thus,

data analysis involves the processing of collecting data that facilitates the study (Hunt et al. 1982).

### **7.6.1 Statistical Analysis**

Our goals were to assess the reliability of LOS-27 and its validity in the context of Arabic hospital pharmacies. This was done by confirming whether the seven organizational learning dimensions were suitable for the Arabic population and to evaluate the perceptions of staff about the organizational learning process in Kuwaiti hospital pharmacies. It was also to assess PSOPSC's reliability and validity in the context of Arabic pharmacies, by confirming whether the 11 patient-safety culture dimensions were suitable for an Arabic context, and to evaluate the perceptions of staff about patient safety culture in Kuwaiti hospital pharmacies. The reliable and validated surveys were then used to explore the relationship between organizational learning and pharmacy patient safety culture, and to use the information obtained from here to further explore the relationships between the various dimensions of both surveys.

Statistical package for the social sciences (SPSS) version 22 was used for statistical analysis. Partial Least Square - Structural Equation Modelling (PLS-SEM) was used to analyse the data. There are many reasons for the use of PLS-SEM which were widely discussed in the methodological literature (Hair et al., 2016; Nitzl, 2016). PLS-SEM is a multivariate statistical technique and is widely used for analysing the structural relationships between variables. It offers a highly flexible method for testing complex models and can handle reflective and formative measurement models, as well as single-item constructs simultaneously (Hair Jr et al. 2016; Avkiran 2018). PLS-SEM allows for critical exploratory research to set the basic work for follow-up studies using methods with rigorous assumptions (Avkiran 2018). An additional strength of PLS-SEM is its capability to model composite constructs (Nitzl and Chin 2017). In addition, the PLS-SEM was used to analyse the data of this research, not covariance based – structural equation modelling (CB-SEM), because of the following reasons: First, PLS-SEM is useful when “prediction” is an important part of answering the research question, whereas factor-based methods such as CB-SEM are unsuitable for prediction because of the indeterminacy problem (Nitzl, 2016). Second, PLS-

SEM allows for easier integration of formative construct measurements into an SEM, which was applied in this study as presented in chapter 10 when you tested the both multi-dimensional constructs as whole the sub-dimension. Every formative indicator captures a specific aspect of a latent construct. In this way, the calculated weight for a formative indicator can be interpreted in the same way as the beta coefficient in a regression analysis. These estimated weights for formatively measured constructs offer researchers the possibility of identifying specific success drivers and their relative importance. In contrast to PLS-SEM, the constraints for accommodating formative indicators in CB-SEM often contradict the theoretical assumptions and lead to identification problems (Nitzl, 2016).

For the calculations, we used the Smart PLS 3 software and the path-weighting scheme setting (Ringle et al. 2014). In additional, Excel 2013 was used to analyse demographic and background data.

## **7.7 METHODS ADOPTED**

As explained above, the data analysis of this thesis has been carried out using Excel 2013, SPSS and Smart PLS3 software. This thesis analysed three major studies in a hospital pharmacy setting:

- validation of the Arabic version of LOS-27 and perceptions of pharmacy staff about the organizational learning process;
- validation of the Arabic version of PSOPSC and perceptions of pharmacy staff about patient safety culture; and
- the relationship between organizational learning and patient safety culture and their dimensions.

The coming analysis methods have been categorized into three categories: first, sample and response statistics and descriptive analysis, which used Excel 2013 and SPSS to serve the three studies. Second, analysis methods of validating the questionnaires, which used SPSS for confirmatory factor analysis, and Excel 2013 for calculating the positive response rate of participants. Third, analysis methods assessing the relationship between organizational learning and

pharmacy patient safety culture and their dimensions, which mainly used Smart PLS3.

### **7.7.1 Sample and Response Statistics**

We used the same sample population for the three studies and analysed the demographic characteristics and background data using Excel 2013. PLS-SEM is a non-parametric statistical method, so it does not require the data to be normally distributed (Hair Jr et al. 2016). Descriptive statistics were used to calculate and present the general mean score, standard deviation, kurtosis and skewness. To determine the necessary sample size for PLS-SEM, researchers should initially determine the necessary statistical power. For business studies, the statistical power of at least 0.8 at an  $\alpha$  level of 0.05 is considered acceptable (Nitzl, 2016). The missing response per item was quite low (0.3%) in our study; we therefore employed the mean replacement procedure for missing responses (Hair Jr et al. 2016). Negatively worded items were reverse coded to ensure that positive answers indicated a higher score.

### **7.7.2 Analysis Method of Validation of the Questionnaire**

This section served the analysis methods of the two studies; validation of the Arabic version of LOS-27 and perceptions of pharmacy staff about organizational learning process, and validation of the Arabic version of PSOPSC and perceptions of pharmacy staff about patient safety culture

#### **7.7.2.1 Confirmatory factor analysis**

Confirmatory factor analysis (CFA) can be used to confirm a particular pattern of relationships among survey items predicated on past research and theory (Tereanu et al. 2018). The model must be validated in a different sample from the one in which the model was adjusted. We used CFA, comprising an indicator and construct reliability, in order to compare the Arabic sample factor structure to that reported for the original survey.

Regarding Indicator reliability, factor loadings that are 0.7 or higher are deemed recommendable (Hair Jr et al. 2016), although some researchers claim that a result of 0.4 or higher indicates that the item's relationship to the *a priori* composite is acceptable (Matsunaga 2010). We also examined the Standardized

Root Mean Square Residual (SRMR), which is the standardized difference between the observed covariance and predicted covariance. A value of zero for the SRMR indicates perfect fit, but a value  $<0.085$  is considered a good fit (Kenny 2014; Hair Jr et al. 2016).

Cronbach's alpha represents a popular reliability testing technique. It is a measure for construct reliability that requires that the indicators assigned to a latent variable correlate positively and strongly with each other. The internal consistency is used to determine how well the indicators reflect a latent variable. We calculated Cronbach's  $\alpha$  to evaluate the internal consistency of all of the subscales in order to determine the quality of each construct. The Cronbach's  $\alpha$  on subscales of a scale measures the internal consistency of the specific part of the overall construct that is significant in order to ensure the reliability of the overall scale and its components. An internal consistency value (Cronbach's  $\alpha \geq 0.70$ ) for newly developed scales has been recommended (Nie et al. 2013). A 0.7 level of reliability is considered sufficient for a survey instrument (Bland and Altman 1997), although some researchers perceive 0.6 and higher as being sufficient (Field 2009).

Validity refers to how well the instrument measures what it is intended to quantify: construct validity is considered the most valuable indicator (Nieva and Sorra 2003). Composite scores and inter-correlations can allow us to analyse construct validity. The construct validity of each safety culture and organizational learning dimension would be reflected in composite scores that are moderately related to one another. Pearson correlations should be below 0.85 between the composites to be considered unique and to avoid issues of multicollinearity (Sorra and Dyer 2010; Kline 2015). The inter-correlations between patient safety composites and "Patient safety grade" were also explored to determine whether the composites were related to the self-reported outcome.

#### **7.7.2.2 Positive Response Rate**

Measuring positive responses to survey questions enabled us to quantify the perspectives of pharmacy staff regarding organizational learning and patient safety culture. We calculated the positive response rate according to the formula by the PSOPSC User's Guide of (Westat 2012a). However, as mentioned above,



the response rate was modified into a 7-point scale. The three highest scoring (5, 6 and 7) answers (slightly agree, agree, strongly agree, or frequently, very frequently, always), were perceived as positive response answers. Items marked as 'neutral/sometimes' responses were excluded when displaying percentages of positive response scores

### **7.7.3 Analysis Methods of the Relationship between Organizational Learning and Pharmacy Patient Safety Culture and their Dimensions**

#### **7.7.3.1 Hierarchical Component Model (HCM)**

Establishing an HCM in PLS-SEM can reduce the number of relationships in the structural model, which makes the PLS-SEM easier to understand (Becker et al. 2012; Hair Jr et al. 2016). In our case, we estimated the HCM in a separate model with the repeated use of indicators, one for PSOPSC and the other for LOS-27. HCM consists of two elements: higher-order components and lower-order components. The higher-order components are reflective measurements that reflect different dimensions of organizational learning and pharmacy patient safety culture, and the lower-order components are formative measures. Therefore, our HCM is a reflective-formative type.

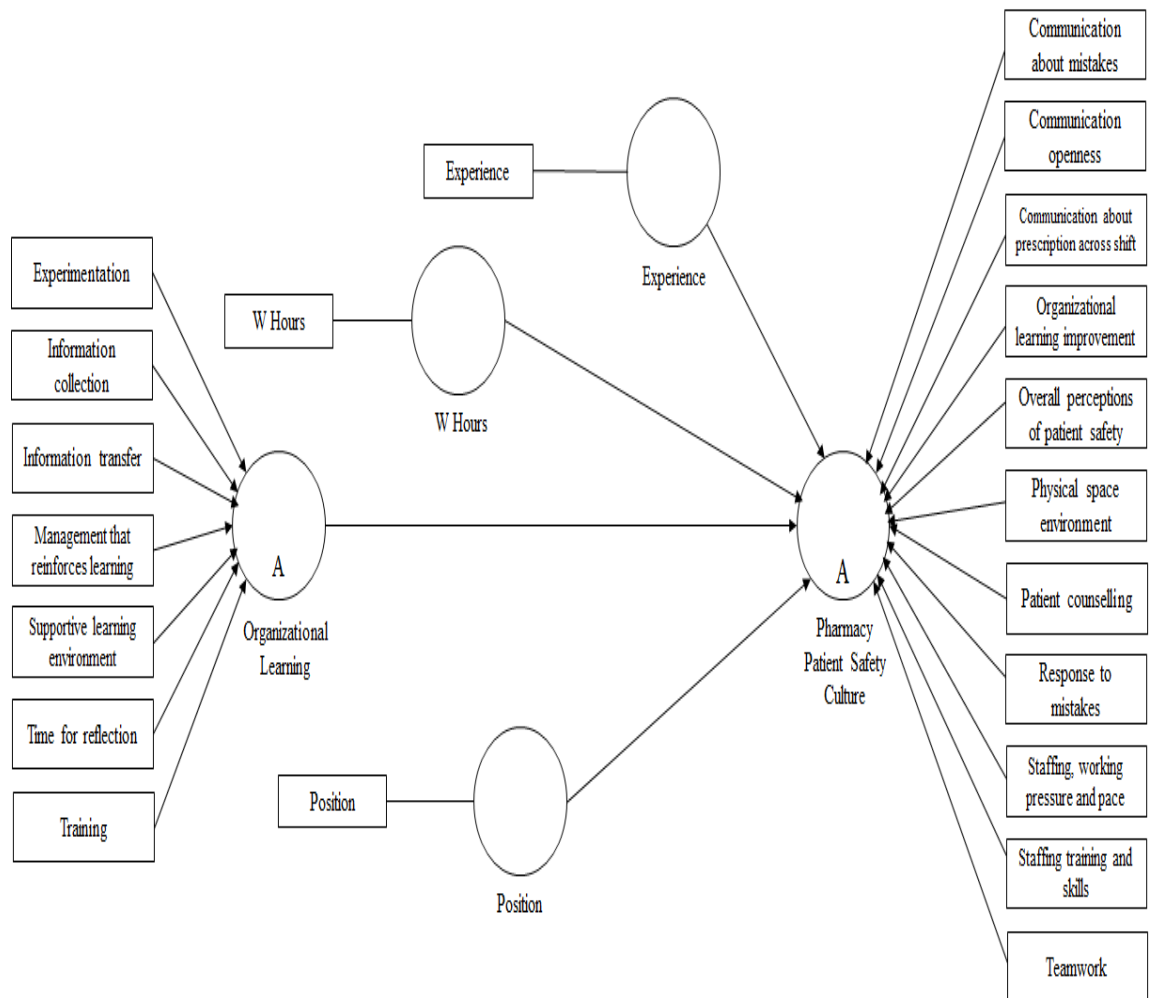
#### **7.7.3.2 The Complete Model**

The complete model examined the relationship between organizational learning and patient safety culture in a hospital pharmacy setting, as seen in Figure 7.1. A two-step process has been utilized to evaluate the complete model.

In the first step, we evaluated the measurement model, which consists of first-order and second-order levels. In the second step, we evaluated the inner path model (Chin 2010). The measurement models were evaluated as the part of the first step. The first-order construct measurements were evaluated; all the first-order constructs are reflective measurements. Reflective measurement models have been evaluated by using indicator loading, which should be higher than 0.7, composite reliability, which should be higher than 0.6. Composite reliability is similar to Cronbach's alpha, but technically more appropriate for PLS-SEM because it takes into account the different outer loadings of the indicator

variables. Furthermore, the average variance extracted (AVE) is analysed, which should be higher than 0.5.

The second-order construct measurements were evaluated; all the second-order constructs are formative measurements. Formative measurement models were evaluated by using outer weight which need to be different than zero and smaller than outer loading of reflective indicators, p-value which should be less than 0.05, and variance inflation factor (VIF) which should be less than 5 (Hair Jr et al. 2016). The structural model estimates are not examined until the reliability and validity of the constructs established. To emphasize the holistic view of the two concepts, organizational learning and patient safety culture in hospital pharmacy settings, and the effect of control variables on path model, the inner model of the complete model and the effect of control variables on the path model were evaluated by inspecting the path coefficient, p-value and  $R^2$ . Next, to evaluate the global model fit, SRMR was examined, which is the standardized difference between the observed covariance and predicted covariance, with a value of zero indicating perfect fit, but a value  $<0.085$  is considered a good fit (Kenny 2014; Hair Jr et al. 2016). Also, normal fit index (NFI) has been examined to judge the global model fit. A value above 0.9 usually represents acceptable fit.



**Figure 7.1 The Complete Model (Circles represent the construct measurements – second order constructs and the rectangles represent the domains and control variables)**

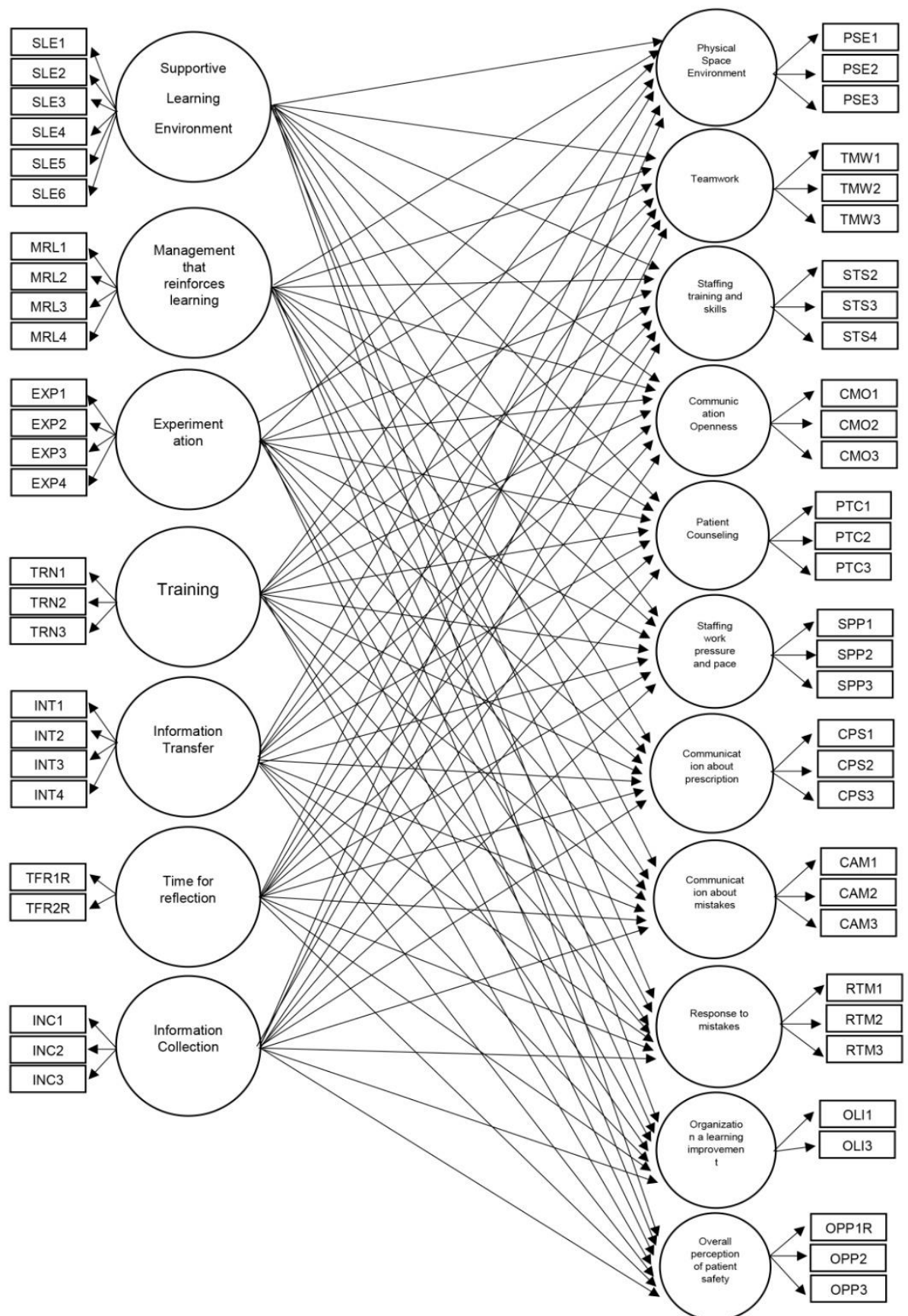
Source: devised by author

### 7.7.3.3 The Explorative Model

The explorative model was used to examine the relationships between each dimension of organizational learning to each dimension of pharmacy patient safety culture in depth, as seen in Figure 7.2. A two-stage process was utilized to evaluate the explorative model. In the first step, we evaluated the measurement model. In the second step, we evaluated the inner path model. At the first-order level of measurement model, all items are reflective measurements. An assessment of discriminant validity is a necessity in any research that includes latent variables; this is to prevent multicollinearity issues. Fornell-Larcker criterion and cross-loading are the most widely used method for this purpose (Ab Hamid et al. 2017). Also, Henseler et al. (2015) argue that for

SEM-PLS, the Fornell-Larcker criterion and cross-loadings are the dominant approaches for evaluating discriminant validity. Therefore, Fornell-Larcker criterion and cross-loading were employed for evaluating the discriminant validity of the construct measurements (Hair Jr et al. 2016).

To evaluate the inner path model, the bias-corrected and accelerated bootstrapping procedure with 5,000 bootstraps without sign changes was used for calculating the path coefficient, which has standardized values between -1 and +1 (values close to +1 and -1 represent strong positive and negative relationships, respectively), the p-values that should be less than 0.05, and  $R^2$  that range between 0 and 1 (the higher  $R^2$ , the better).



**Figure 7.2 The Explorative Model**

Source: DeVised by author

#### **7.7.3.4 Multi-group Analysis**

Multi-group analysis means comparing identical research models across different samples of respondents (Sarstedt et al. 2011; Hair Jr et al. 2016). Therefore, we used multi-group analysis to see if there are statistically significant differences between private and public hospital pharmacies.

### **7.8 ETHICAL CONSIDERATIONS**

In order to be ethically acceptable, the thesis needs to conform to a defined set of ethics; these must be adopted by the investigator in the course of the research. This helps to establish the credibility and authenticity of the research. The researcher is expected to be unbiased in recording and analysing the data, and must ensure that the responses are genuine. The researcher must not be involved in any sort of alteration or manipulation of data or the outcomes (Millum and Sina 2014).

Here, the researcher asked the respondents to consent to give the information before starting the questionnaire, as seen in Appendix D. The researcher infiltrated the personal space of the respondents for the purpose of the survey; hence, the researcher needs to ensure that the anonymity of the respondents was maintained in the process of investigation and thereafter. Also, the researcher takes the responsibility that legal and judicial liabilities, as well as other mandatory disclosures, were explained to the respondents well in advance, before taking the questionnaire.

Ethical approval for the study was granted by the Social and Health Sciences Research Ethics Panel, and the Chair of the Humanities at Bradford University, the Ministry of Health in Kuwait, and the managers of selected private and public hospital pharmacies. However, informed consent was also obtained from all respondents; moreover, responding to the questionnaire was voluntary and all answers were de-identified to maintain confidentiality. In order to protect the confidentiality of the participants, the identities of the six selected hospitals were concealed and referred to as Hospital A, B, C, D, E and F in the analysis.

## **7.9 SUMMARY**

The research methods were outlined in this chapter. The chapter explained how, by using a cross-sectional survey design consisting of the PSOPSC and LOS-27 surveys, the study explores the nature of the relationship between organizational learning and patient safety culture in hospital pharmacy settings. The chapter continued to justify the selected survey instruments by establishing the relevance of the survey methods used and provided specific details as to how the research methods had been applied are provided. Finally, the ethical considerations of this research study, and validity and reliability of research were discussed and clarified in this chapter.

## PART FOUR

### RESULTS AND DISCUSSION CHAPTERS

In the fourth part of the thesis, the results, analysis and discussion of the three studies will be presented. The first study assesses the validation of the Arabic Version of LOS-27 and perceptions of pharmacy staff about the organizational learning process. The second study tests the validation of the Arabic version of PSOPSC and perceptions of pharmacy staff about patient safety culture. The third study analyses the relationship between organizational learning and patient safety culture in hospital pharmacy settings. In this part, each chapter first presents the results of the analysis, followed by a discussion. The chapter then presents the limitations of the research and recommendations for future study. The findings from this research extend the limited existing literature, providing in-depth analysis of challenges in a hospital pharmacy setting, and propose organizational learning as a method of resolving the identified challenges. The studies depict a positive relationship between organizational learning and patient safety culture. This part includes Chapters 8, 9 and 10 as follows:

**Chapter 8:** *Validation of the Arabic version of LOS-27 and perceptions of pharmacy staff about the organizational learning process* describes the findings obtained from Study I, which tested the reliability and validity of the Arabic version of LOS-27. The findings assist in the evaluation of the perceptions of staff about patient safety culture in Kuwaiti hospital pharmacies. Through a confirmatory factor analysis (CFA), the chapter indicates that the Arabic translation of the LOS-27 questionnaire has adequate levels of reliability and validity, consistent with the original survey. The results are presented in the chapter in a tabulated and graphical form to assist in a better understanding of these results. The high response rate emphasized the willingness of Kuwaiti pharmacies to develop a culture that consistently leads to the enhancement of learning. The chapter further accentuates the limitation of this study; this includes the speedy application of the survey and the biased answers by social desirability, which might not present accurate results. Further, the recommendations for future study are presented; these highlight the requirement for a study among diverse healthcare professionals within Arabic countries as the primary area of study.



**Chapter 9:** *Validation of the Arabic version of PSOPSC and perceptions of pharmacy staff about patient safety culture* describes the research results obtained from Study II, which evaluated staff perceptions of patient safety culture in Kuwaiti hospital pharmacies using an Arabic translated version of PSOPSC. A total of 10 out of the 11 dimensions of patient safety culture depicted a positive perception about the patient safety culture. Through a confirmatory factor analysis (CFA), the chapter indicates that the Arabic translation of the PSOPSC questionnaire has adequate levels of reliability and validity, consistent with the original AHRQ survey. The chapter also points out the limitations and presented recommendations for further research, which include the need to evaluate the translated version's applicability in Arabic hospital pharmacy settings.

**Chapter 10:** *The relationship between organizational learning and patient safety culture in hospital pharmacy settings* describes the research results obtained from Study III and following the discussion. The results of the complete model that shows how far organizational learning influences pharmacy patient safety culture have been presented. Also, the results of a group test between public vs. private hospital pharmacies have been presented. In addition, the results of the explorative model that connect each dimension of organizational learning with each dimension of pharmacy patient safety culture to gain deeper insights have been outlined. The overall results of Study III indicated a significant positive relationship between organizational learning and patient safety culture in hospital pharmacy settings. The results also indicate that several dimensions of organizational learning have significant links to the various dimensions of the pharmacy patient safety culture. Specifically, training, management that reinforces learning, and a supportive learning environment had the strongest effects on the pharmacy patient safety culture dimensions.

## **CHAPTER 8**

### **8 STUDY I: VALIDATION OF ARABIC VERSION OF LEARNING ORGANIZATION SURVEY SHORT- FORM AND PERCEPTIONS OF PHARMACY STAFF ABOUT ORGANIZATIONAL LEARNING PROCESS**

#### **8.1 INTRODUCTION**

The previous chapter outlined the research methodology and the choice of the analytical procedures to be used for the testing of the research questions. This study aimed to assess the reliability and validity of an Arabic version of the learning organization survey LOS-27 and to evaluate staff perceptions about organizational learning in hospital pharmacies of Kuwait. This chapter presents the results of Study I, including sample and response statistics, descriptive analysis of the seven dimensions of LOS-27, confirmatory factor analysis, construct reliability and validity, and the positive response rate of seven dimensions of LOS-27 and their items.

#### **8.2 SAMPLE AND RESPONSE STATISTICS (STUDY I, STUDY II AND STUDY III)**

A total of 460 surveys were distributed among pharmacy staff at the six selected hospital pharmacies: 272 surveys (59.1% response rate) were completed and returned. The required sample size is 130 for detecting effects with a statistical power of least 0.8 at an  $\alpha$ -level of 0.05. Thus, the relevant effects in our research model can be detected with the sample size of 272 (Nitzl, 2016). The collected sample from the six hospitals served the data analysis for the three studies: Study I, Study II and Study III. Table 8.1 displays the characteristics of the respondents. Of these, 189 respondents (69.5%) belonged to public hospital pharmacies and 83 (30.5%) belonged to private hospital pharmacies, as presented in Figure 8.1.

Table 8.1 Demographic characteristics of the respondents

Characteristic	All (%)	Public Hospital Pharmacies (%)	Private Hospital Pharmacies (%)
<b>Number</b>	272	189 (69)	83 (31)
<b>Staff Position</b>			
Pharmacists	214 (79)	146 (54)	68 (25)
Pharmacy technicians	47 (17)	36 (13)	12 (4)
Pharmacy Clerks	3 (1)	0 (0)	3 (1)
Pharmacy Students	8 (3)	7 (3)	0 (0)
<b>Experience</b>			
Less than 6 months	7 (3)	7 (3)	0 (0)
6 months to less than 1 year	16 (6)	13 (5)	3 (1)
1 year to less than 3 years	44 (16)	32 (12)	12 (4)
3 years to less than 6 years	73 (27)	38 (14)	35 (13)
6 years to less than 12 years	70 (26)	45 (17)	25 (9)
12 years or more	62 (23)	54 (20)	8 (3)
<b>Working Hours</b>			
1 to 16 hours per week	3(1)	3 (1)	0 (0)
17 to 31 hours per week	19 (7)	19 (7)	0 (0)
32 to 40 hours per week	106 (39)	99 (36)	7 (3)
More than 40 hours per week	144 (53)	68 (25)	76 (28)

Source: Own calculations

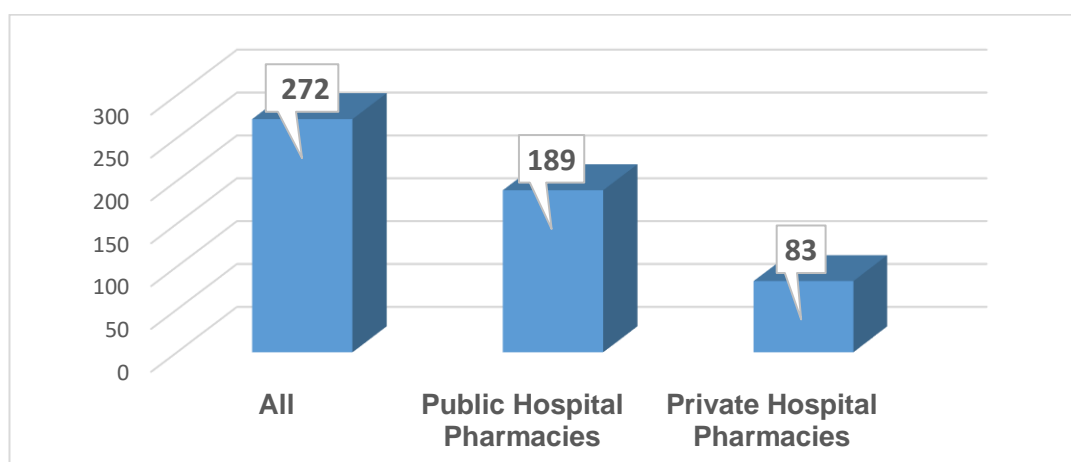
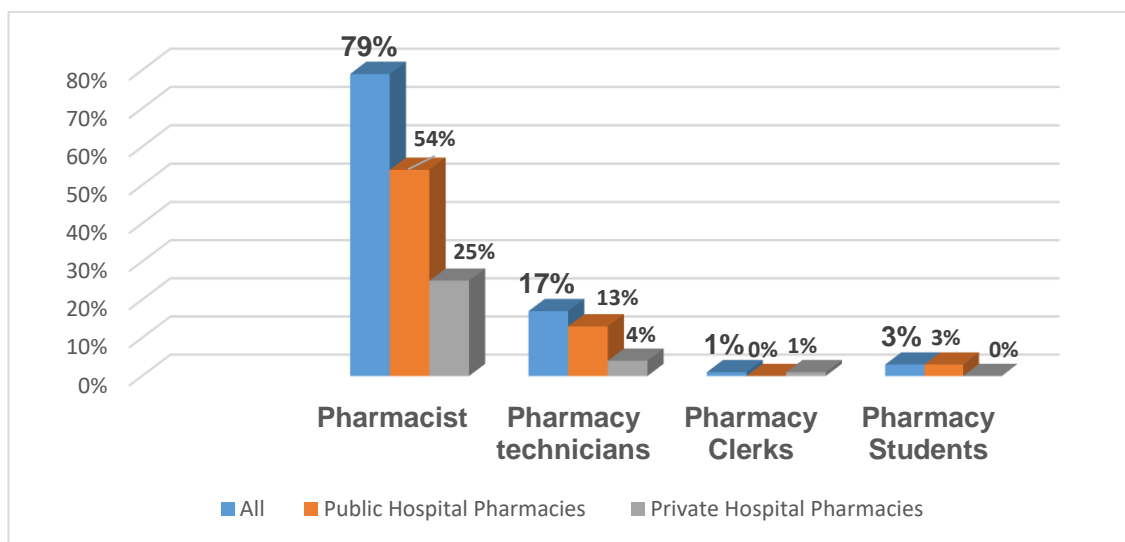


Figure 8.1 Participants

Source: Own calculations

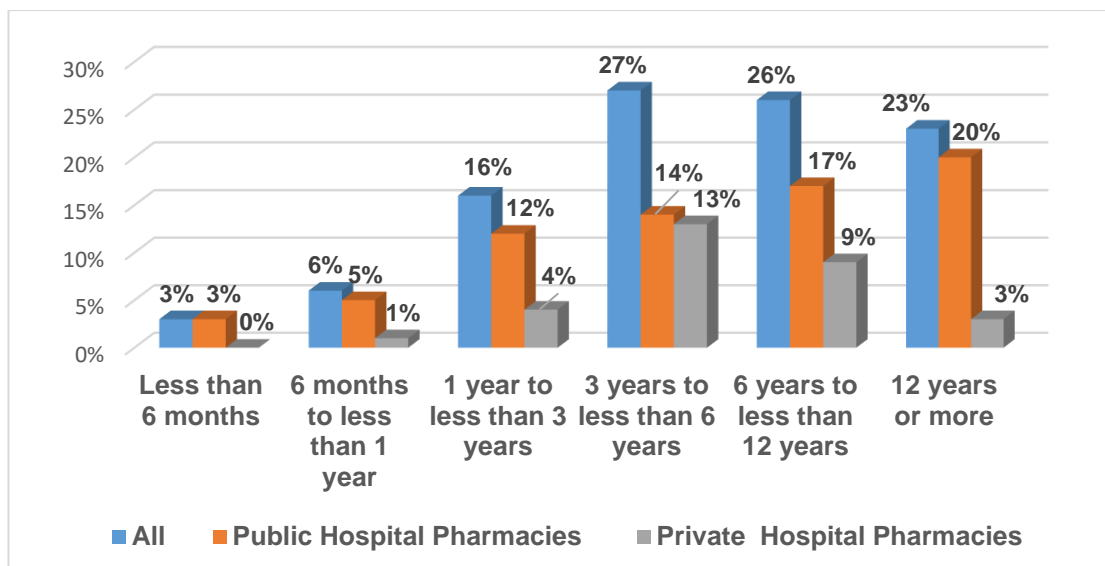
In addition, out of these 79% (214/272) were pharmacists wherein 146 (54% of 79%) belonged to public hospitals and the remaining 68 (25% of 79%) were associated with private hospitals. This was followed by 47 pharmacy technicians (17%), who had been distributed in the ratio of 3:1 for public and private hospitals respectively. Next were three pharmacy clerks (1%), all of whom belonged to private hospital pharmacies, and eight pharmacy students (3%), all of whom belonged to public hospital pharmacies. The majority of the respondents (69%) were from public hospitals, as presented in Figure 8.2.



**Figure 8.2 Staff Position of Participants**

Source: Own calculations

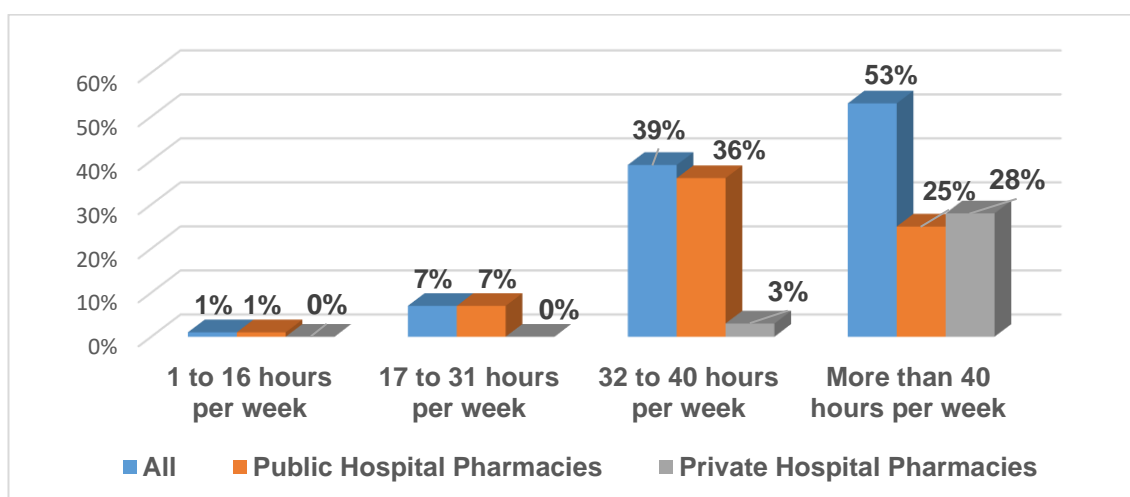
Only 3% of the respondents have experience of less than six months and all of these belong to the public hospital pharmacies. A further 6% have experience of 6-12 months; only 1% of these respondents belonged to private hospital pharmacies. Another 16% fall into the experience group of 1-3 years, followed by 27% respondents (the majority) falling into the experience group of 3-6 years; 26% have 6-12 years' experience, and the remaining 23% reported having 12 years' or more experience. In terms of years of experience, the number of respondents coming from public hospital pharmacies dominate that of private hospital pharmacies in all experience groups, as explained in Figure 8.3.



**Figure 8.3 Experience of Participants**

Source: Own calculations

It was observed that 1% of the respondents reported working 1-16 hours per week, 4% reported 17-31 hours of work per week, followed by 42% reporting 32-40 hours of work per week; the majority (53%) reported their work hours per week to be more than 40 hours. If we look at the bifurcation of the number of respondents into public and private hospital pharmacies, it may be observed that none of the respondents in the private hospital pharmacy reported weekly working hours of less than 32 hours.



**Figure 8.4 Working Hours of Participants**

Source: Own calculations

However, the respondents from public hospital pharmacies tended to have greater number of years' experience than their private hospital pharmacy counterparts, although employees at the latter worked longer hours.

### 8.3 RESULTS OF STUDY I

#### 8.3.1 Descriptive Analysis of LOS-27

Table 8.2 represents the values of mean, standard deviations, kurtosis, and skewness for all dimensions of the Arabic version of LOS-27. The highest mean was observed to be 5.69 against the item "my manager(s) listens(s) to me attentively" under the dimension "management that reinforces learning"; the standard deviation against the item is also relatively low when compared to the other items. This means that the respondents from the pharmacy settings have acknowledged that management support positively. The lowest observed mean of 3.12 was for the dimension of information transfer of the item "pharmacy has forums for meeting with and learning from: Customers/clients"; this indicates that the response rate from this dimension has been negative to neutral. Overall, the mean score of most of the items under all dimensions is higher than 4, which indicates a positive response from the respondents concerning the organization being a learning organization.

Most of the elements present a negative skewness, which determines that the left tail of the probability density function is longer when compared to the right side. It indicates that the distribution is skewed to the left and there is a lack of symmetry. Since most of the values lie between either -1 and -0.5 or 0.5 and 1, overall, the distribution can be said to be moderately skewed. In regards to the kurtosis, the distribution is more or less normally distributed, as most of the values lie well with the reference range of -1 to +1.

**Table 8.2 Descriptive Analysis**

	Mean	S.D.	Kurtosis	Skewness
<b>Support learning environment</b>				
In this pharmacy, people value new ideas	5.261	1.386	1.094	-1.176
Differences in opinions are welcomed	5.375	1.245	1.085	-1.028

in this pharmacy				
In this pharmacy, people are open to alternative ways of getting work done	4.217	1.412	0.684	-0.949
People in this pharmacy are eager to share information about what doesn't work as well as to share information about what does work	5.434	1.273	0.974	-0.985
This pharmacy engages in productive conflict and debate during discussions	5.342	1.233	0.664	-0.888
In this pharmacy, we frequently identify and discuss underlying assumptions that might affect key decisions	5.272	1.248	1.667	-1.068
If you make a mistake in this pharmacy, it is often held against you (r)	4.088	1.529	-0.669	-0.100
<b>Management that Reinforces Learning</b>				
My manager(s) establish (es) forums for and provide(s) time and resources for identifying problems and organizational challenges	5.305	1.403	-0.221	-0.660
My manager(s) establish (es) forums for and provide(s) time and resources for reflecting and improving on past performance	5.353	1.361	-0.371	-0.553
My manager(s) listen(s) attentively	5.691	1.194	0.478	-0.817
My manager(s) invite(s) input from others in discussions	5.588	1.237	0.231	-0.738
<b>Experimentation</b>				
This pharmacy experiments frequently with new product/ service offerings	4.601	1.415	0.026	-0.698
This pharmacy experiments frequently with new ways of working	4.978	1.206	1.004	-0.741
This pharmacy frequently employs pilot projects or simulations when trying out new ideas	4.509	1.308	0.120	-0.438
This pharmacy has a formal process for conducting and evaluating experiments or new ideas	4.629	1.395	-0.067	-0.508
<b>Training</b>				

Experienced employees in this pharmacy receive training when shifting to a new position	4.860	1.523	-0.091	-0.692
Experienced employees in this pharmacy receive training when new initiatives are launched	4.816	1.481	-0.353	-0.561
Newly hired employees in this pharmacy receive adequate training	5.495	1.144	1.347	-0.924
<b>Information Transfer</b>				
This pharmacy has forums for meeting with and learning from: Experts from outside the organization	4.055	1.515	-0.592	-0.515
This pharmacy has forums for meeting with and learning from: Experts from other departments/ teams/divisions	4.320	1.494	-0.176	-0.533
This pharmacy has forums for meeting with and learning from: Customers/clients	3.125	1.515	-0.601	0.266
This pharmacy regularly conducts post audits, after-action reviews, and debriefings	4.413	1.434	0.102	-0.660
<b>Time For Reflection</b>				
There is simply no time for reflection in this pharmacy (r)	4.360	1.301	-0.189	0.063
In this pharmacy, people are too busy to invest time in improvement	4.750	1.319	0.455	-0.624
<b>Information Collection</b>				
This pharmacy frequently compares its performance to: Best-in-class organizations	4.794	1.287	0.434	-0.589
This pharmacy frequently compares its performance to: Other similar pharmacy	4.764	1.296	0.570	-0.679
This pharmacy consistently collects information on technological trends	5.099	1.318	1.236	-0.989

[r]: Reverse-coded items

Source: Own calculations



### 8.3.2 Confirmatory Factor Analysis of LOS-27

#### 8.3.2.1 Indicator Reliability of LOS-27

Factor loadings for each item are presented in Table 8.3. In our survey, all loadings are higher than 0.7 in this analysis, except for one, which was deleted. The lowest loading of 0.05 occurred for the item “If you make a mistake in this pharmacy, it is often held against you”, whereas the strongest loading of 0.94 was observed for the item “Experienced employees in this pharmacy receive training when new initiatives are launched”.

The SRMR score showed a value of 0.08, allowing it to be considered a good fit as it is <0.085 (Kenny 2014; Hair Jr et al. 2016).

Table 8.3 Factor Loadings

Items	Factor Loading Original Version / USA	Factor Loading Arabic Version / Kuwait
<b>Supportive learning environment (SLE)</b>		
1- In this pharmacy, people value new ideas	0.86	0.83
2- Differences in opinions are welcomed in this pharmacy	0.82	0.85
3- In this pharmacy, people are open to alternative ways of getting work done	0.81	0.87
4- People in this pharmacy are eager to share information about what doesn't work as well as to share information about what does work	0.72	0.87
5- This pharmacy engages in productive conflict and debate during discussions	0.75	0.87
6- In this pharmacy, we frequently identify and discuss underlying assumptions that might affect key decisions	0.72	0.82
7- If you make a mistake in this pharmacy, it is often held against you ( <i>r</i> )	0.48	0.05 Deleted
<b>Management that reinforce learning (MRL)</b>		
8- My manager(s) establish (es) forums for and provide(s) time and resources for identifying problems and organizational challenges	0.92	0.92

9- My manager(s) establish (es) forums for and provide(s) time and resources for reflecting and improving on past performance.	0.91	0.93
10- My manager(s) listen(s) attentively.	0.85	0.91
11- My manager(s) invite(s) input from others in discussions.	0.91	0.92
<b>Experimentation (EXP)</b>		
12- This pharmacy experiments frequently with new product/service offerings	0.77	0.72
13- This pharmacy experiments frequently with new ways of working	0.79	0.87
14- This pharmacy frequently employs pilot projects or simulations when trying out new ideas	0.74	0.87
15- This pharmacy has a formal process for conducting and evaluating experiments or new ideas	0.77	0.78
<b>Training (TRN)</b>		
16- Experienced employees in this pharmacy receive training when shifting to a new position	0.87	0.92
17- Experienced employees in this pharmacy receive training when new initiatives are launched	0.85	0.94
18- Newly hired employees in this pharmacy receive adequate training	0.80	0.80
<b>Information transfer (INT)</b>		
19- This pharmacy has forums for meeting with and learning from: Experts from outside the organization	0.67	0.81
20- This pharmacy has forums for meeting with and learning from: Experts from other departments/ teams/divisions	0.71	0.86
21- This pharmacy has forums for meeting with and learning from: Customers/clients	0.68	0.76
22- This pharmacy regularly conducts post audits, after-action reviews, and debriefings	0.73	0.77
<b>Time for reflection (TFR)</b>		
23- There is simply no time for reflection in this pharmacy (r)	0.86	0.76
24- In this pharmacy, people are too busy to invest time in improvement	0.87	0.76
<b>Information collection</b>		
25- This pharmacy frequently compares its performance to: Best-in-class organizations	0.76	0.90

26- This pharmacy frequently compares its performance to: Other similar pharmacy	0.47	0.90
27- This pharmacy consistently collects information on technological trends	0.72	0.74

[r]: Reverse-coded items

Source: Own calculations

### 8.3.2.2 Discriminant Validity of LOS-27

Inter-correlations among the seven dimensions of the Arabic version of LOS-27 were reviewed to assess the discriminant validity of the constructs (Table 8.4). None of the inter-correlations of the dimensions was greater than 0.85, which signifies the absence of a multicollinearity problem (Sorra and Dyer 2010; Kline 2015). The lowest inter-correlation of 0.34 was found between “Information Transfer” and “Time For Reflection”, whereas the highest inter-correlation of 0.68 was between “Experimentation” and “Training”. All the dimensions were statistically significant ( $p < 0.01$ ) and were positively correlated with the main variable, i.e. being a learning organization.

Table 8.4 Inter-correlations of the Seven Dimensions of LOS-27

	1	2	3	4	5	6	7
1- Supportive Learning Environment	1	.642**	.651**	.678**	.501**	.541**	.553**
2- Management Reinforces Learning		1	.591**	.532**	.558**	.481**	.494**
3-Experimentation			1	.682**	.585**	.419**	.530**
4-Training				1	.499**	.464**	.578**
5- Information Transfer					1	.344**	.587**
6-Time For Reflection						1	.483**
7- Information Collection							1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Own calculations

### 8.3.2.3 Construct Reliability of LOS-27

Construct reliability analysis, which used Cronbach’s alpha ( $\alpha$ ), was employed to check the reliability of the data. It was executed on the seven dimensions of the Arabic version of LOS-27 (see Table 8.5) to ensure that there had been internal consistency in all the components of the survey. All but one of the dimensions

have a Cronbach's alpha ( $\alpha$ ) of more than 0.7; the exception was "Time for Reflection", with an  $\alpha = 0.27$ . The highest Cronbach's alpha ( $\alpha$ ) was obtained for the dimension "Management that reinforces learning" ( $\alpha = 0.94$ ).

**Table 8.5 Cronbach's  $\alpha$  for all dimensions and positive response rate for dimensions and items of LOS-27**

No.	Dimensions	Cronbach's Alpha of USA Original Survey	Cronbach's Alpha of Kuwait Survey	Positive Response Rate / Kuwait %
1-	<b>Supportive Learning Environment (SLE)</b> 1- In this pharmacy, people value new ideas 2- Differences in opinions are welcomed in this pharmacy 3- In this pharmacy, people are open to alternative ways of getting work done 4- People in this pharmacy are eager to share information about what doesn't work as well as to share information about what does work 5- This pharmacy engages in productive conflict and debate during discussions 6- In this pharmacy, we frequently identify and discuss underlying assumptions that might affect key decisions 7- If you make a mistake in this pharmacy, it is often held against you (r)	0.89	0.86       Deleted	74 79 82  76  82  80  81  35
2-	<b>Management that Reinforces Learning (MRL)</b> 8- My manager(s) establish (es) forums for and provide(s) time and resources for identifying problems and organizational challenges 9- My manager(s) establish (es) forums for and provide(s) time and resources for reflecting and improving on past performance. 10- My manager(s) listen(s) attentively. 11- My manager(s) invite(s) input from others in discussions.	0.93	0.94	77  70  71  85 82
3-	<b>Experimentation (EXP)</b> 12- This pharmacy experiments frequently with new product/ service offerings 13- This pharmacy experiments frequently with new ways of working 14- This pharmacy frequently employs pilot projects or simulations when trying out new ideas 15- This pharmacy has a formal process for conducting and evaluating experiments or new ideas	0.86	0.82	60 61  72  49  58
4-	<b>Training (TRN)</b>	0.88	0.87	70

	16- Experienced employees in this pharmacy receive training when shifting to a new position			64
	17- Experienced employees in this pharmacy receive training when new initiatives are launched			64
	18- Newly hired employees in this pharmacy receive adequate training			83
5-	<b>Information transfer (INT)</b> 19- This pharmacy has forums for meeting with and learning from: Experts from outside the organization 20- This pharmacy has forums for meeting with and learning from: Experts from other departments/ teams/divisions 21- This pharmacy has forums for meeting with and learning from: Customers/clients 22- This pharmacy regularly conducts post audits, after-action reviews, and debriefings	0.86	0.81	43 46  51  18  59
6-	<b>Time for reflection (TFR)</b> 23- There is simply no time for reflection in this pharmacy (r) 24- In this pharmacy, people are too busy to invest time in improvement	0.86	0.27	55 46  64
7-	<b>Information Collection (INC)</b> 25- This pharmacy frequently compares its performance to: Best-in-class organizations 26- This pharmacy frequently compares its performance to: Other similar pharmacy 27- This pharmacy consistently collects information on technological trends	0.75	0.80	69 66  66  76

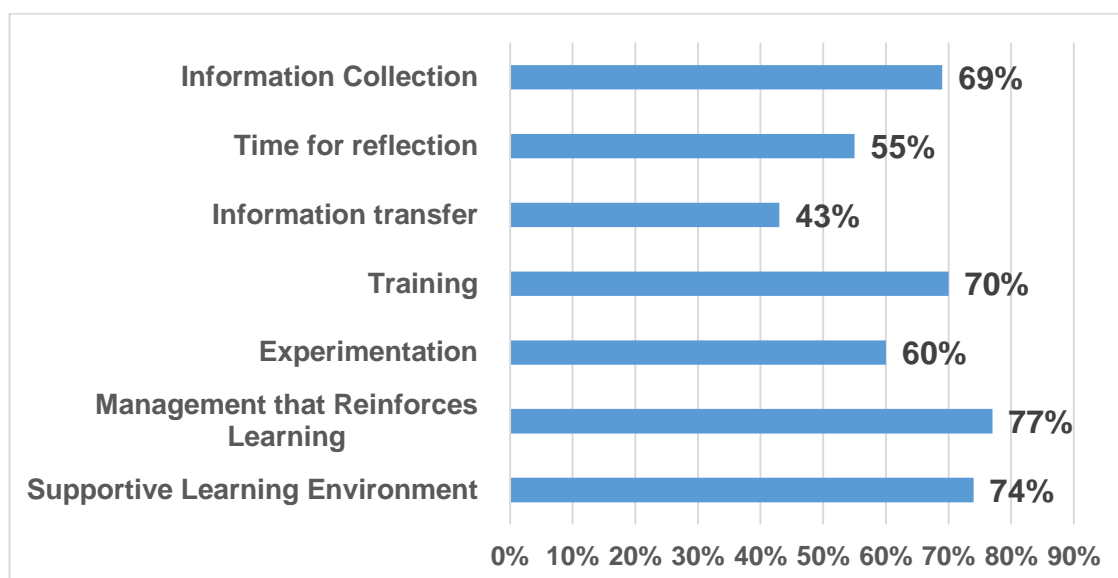
[r]: Reverse-coded items

Source: Own calculations

### 8.3.3 Positive Response Rate of LOS-27

The positive response rates for the seven dimensions of the Arabic version of LOS-27, as shown in Figure 8.5 and Table 8.5, ranged from 43-77%, and the overall average positive rate was 64%. The lowest positive response rate was noted for the dimension “Information Transfer” (43%), while the highest positive response rate was recorded for the dimension “Management that reinforces learning” (77%). There were only two dimensions with a positive response rate of less than 60%, i.e. “Information Transfer” (43%) and “Time for reflection” (55%). The positive response rates for the items ranged from 18% to 85%. The highest positive response rate of 85% was for the item “my manager(s) listen(s) attentively”, whereas the lowest positive response rate was observed against the

item “this pharmacy has forums for meeting with and learning from: Customers/clients”.



**Figure 8.5 Positive Response Rate of Arabic Version of LOS-27 per Dimension**

Source: Own calculations

## 8.4 DISCUSSION

The current study is the first to assess the reliability and validity of the translated Arabic version of LOS-27 in hospital pharmacy settings. Furthermore, it is the first study to report data on staff perceptions about organizational learning in Kuwaiti hospital pharmacies. By assessing the organization’s capability to learn, one can identify the areas where an organization lags and highlight the areas that require improvements. As reported in the literature and in the research method chapter, Garvin et al. (2008) identified three building blocks in organizational learning, namely, a supportive learning environment, concrete learning processes and practices, and leadership that reinforces learning. By assessing how well a team, unit, or company exhibits the defining characteristics for each building block, one may identify areas for improvement (Garvin et al. 2008). The LOS-27 survey, initially developed by Singer et al. (2012), is based on similar building blocks; their study establishes that the survey reliably measures the major aspects of organizational learning. The current study aimed to translate and validate the LOS-27 survey for use in the Arabic regions, as all countries differ in some manner in terms of culture, demographic patterns, resource abilities, and working

styles. Hence, testing the psychometric properties of the translated LOS-27 survey into the Arabic language was conducted. Through this study, an attempt was made to examine the perceptions of the staff in Kuwaiti hospital pharmacies towards organizational learning.

#### **8.4.1 Discussion on CFA of LOS-27**

The results outlined that the survey observes an adequate degree of reliability. Regarding the construct reliability, Cronbach's alpha ( $\alpha$ ) was calculated for all seven dimensions of the survey, and all dimensions received an  $\alpha > 0.7$ , except for "Time for Reflection", with  $\alpha = 0.27$ . The result was less satisfactory as compared with original LOS-27 data. The dimension 'Time for Reflection' received the lowest Cronbach's  $\alpha$  among the 7 composites; three reasons could account for this. First, a possible explanation is that the translation of this concept in another setting of a different cultural context may not be adequate. Second, the factor structure of the LOS-27 model for these items might not fit the data well. Third, the sample size of the data might not be large enough to achieve consistency in this particular item (unlike most of the others). The highest Cronbach's alpha was observed for the dimension "Management that reinforces learning" ( $\alpha = 0.94$ ), while the original version of LOS-27 had a Cronbach's alpha ( $\alpha$ ) of greater than 0.7 for all the dimensions and almost always higher than 0.85 (Singer et al., 2012). Therefore, the results of this study are entirely consistent with that of the initially developed survey with the only significant difference being the dimension "Time for Reflection". It can be shown that for all other dimensions, the validity of the constructs are sufficient.

The inter-correlations between the seven dimensions show moderately significant correlations, thus making it explicit that no two dimensions measure the same construct, i.e. there is no critical overlapping between the variables of the survey questionnaire. It also means that there is an absence of multicollinearity as all the values are less than 0.85 ( $r < 0.85$ ). Our study received a good model fit, with a value of 0.08. All factor loadings were above 0.7 for all but one item. This indicated that all variables have a strong association with the factor and that there is a consistency in the dimensions being employed in the survey.

Overall, as shown in Figure 8.6, the CFA indicated that the Arabic version of the LOS-27 demonstrated adequate psychometric evidence to indicate that it can be used in an Arabic setting. More specifically, the identified factor loadings were sufficiently similar, which suggests that these are comparable with the original US version. Additionally, the reliability of the specific scales was adequate and indicated levels above the threshold for reliability. From this perspective, this research has contributed to the field by establishing sufficient psychometric evidence to suggest that it is appropriate for use in an Arabic setting, which addresses the first research question of this research, “To what extent the translated Arabic version of the LOS-27 is reliable and valid instrument to be used in the Arab context?”

#### **8.4.2 Discussion on Positive Response Rate of LOS-27**

Positive response rate percentages for the seven dimensions of our survey ranged from 43% to 77%, and the overall average positive rate was 64%. This means that two-thirds of staff had positive perceptions towards the organizational learning process, but the other one-third did not. The dimensions that had a low positive response rate were “Information Transfer” at score of 43% and “Time For Reflection” at score of 55%. A low positive response rate to information transfer in pharmacy settings is not a good indicator, as Garvin (1993) states that a learning organization is any organization that is skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights. Furthermore, according to Garvin et al. (2008), in a learning organization, employees continuously create, obtain, and transfer knowledge, supporting their company in adjusting to the unpredictable faster than their rivals. Therefore, a low positive response rate on these dimensions outlines the potential barriers for Arabic pharmacies in being able to promote learning within their organizations.

The highest percentage of positive response rate was 77% for the dimension “Management that reinforces learning”. A higher positive response rate to the survey questionnaire is an indication of an appropriate awareness of the pharmacy setups towards promoting learning in organizations, i.e. the organizations are keen to develop a culture that consistently leads to



enhancement of learning for its members. Singer et al. (2015) argue that leaders and managers bear the ability to impact learning directly by influencing the learning processes and practices, and indirectly by developing a supportive learning environment. Further, leaders are crucial to provide the guidance and direction necessary to directly support and sustain learning, especially in the complex world of healthcare with pre-existing practices.

Goh (1998) states that building blocks of a learning organization need skilled leaders and managers able to provide useful feedback to their employees to identify problems and opportunities, and who are willing to accept and learn from criticism without being overly defensive. This is pertinent as the second highest positive response rate was 74% for the dimension "Supportive learning environment". This result is in line with the argument of Singer et al. (2015) that the promotion of organizational learning necessitates the devotion of careful attention to the environment in which learning is intended to happen. The third highest positive response rate was 70% for the dimension "Training". This result is also consistent with results of a study conducted by Vidal-Salazar et al. (2012), that environmental training is an essential component of organizational learning.

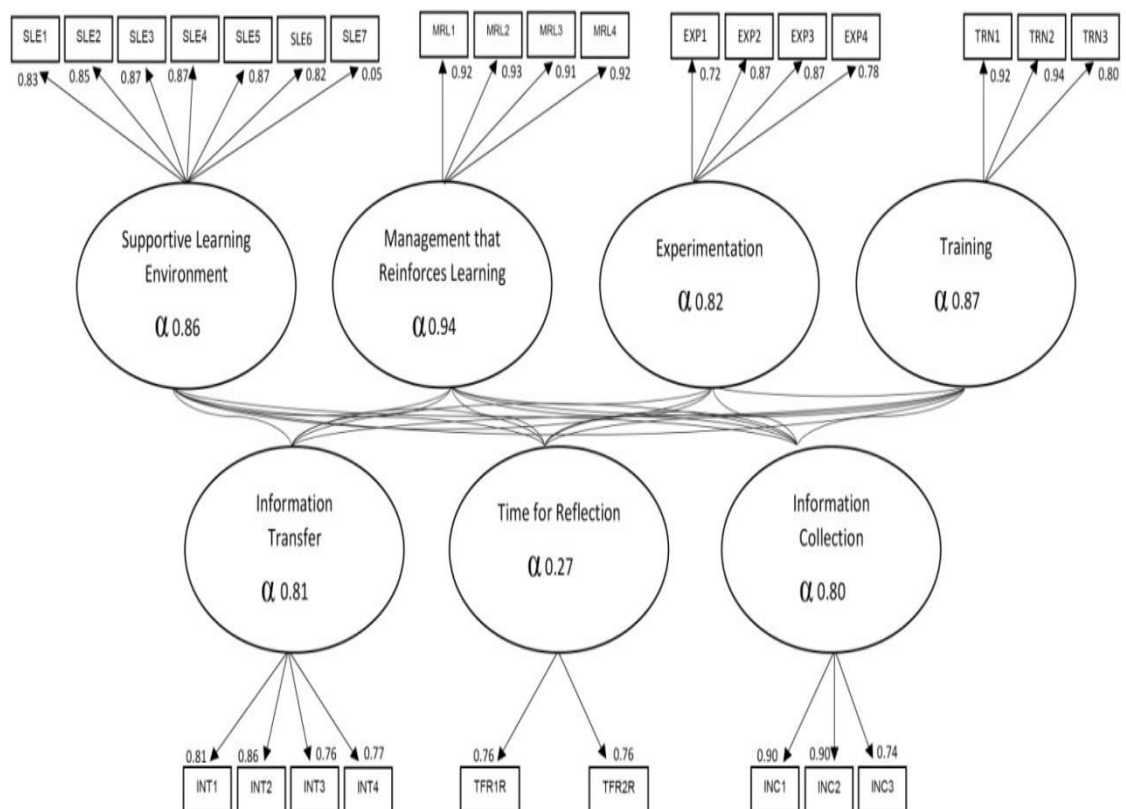
Despite having some areas for improvement, pharmacies in Kuwaiti hospitals were discovered to possess multiple areas of strength, especially with dimensions of management that reinforce learning, supportive learning environment and training. Pharmacies should work hard on addressing the issues of critical dimensions, such as information transfer and time for reflection. Managers of hospital pharmacies need to lessen the workload of their staff to have more time to reflect.

#### **8.4.3 New Contribution**

The Arabic version of this survey will enable Arabic hospital pharmacy staff to assess current levels of the organizational learning process and thereby identify the procedures necessary not only to enhance learning and but also improve areas where they are already doing well. It will also increase awareness about the need and growing importance of the organizational learning process in hospital pharmacy settings in the Arabic context. This version can be utilized as a basis to develop and test the same phenomena in other languages.

#### 8.4.4 Limitations and Recommendations for Further Study

The research is limited as it uses self-reporting and the fact that the sample used was a convenience sample; this means that it is difficult to generalize the findings beyond the present sample. Despite its low cost and speedy application, a self-administered survey might not precisely reflect the respondents' perceptions. Additionally, the fact that the research was conducted in hospital pharmacies limits the ability of the research to be generalized to different healthcare organizations. Therefore, further research is required to assess the performance of the LOS-27 among a diverse sample of healthcare professionals within Arabic countries as the primary area of study. In addition, future research could seek to establish the correlations between organizational learning and other disciplines, or future studies could establish the impact of organizational learning on other areas, such as patient safety culture.



**Figure 8.6 Path Diagram of Seven-Factor Model with Factor Loadings and Cronbach's alpha**

Source: DeVised by author

## **8.5 CHAPTER SUMMARY**

The purpose of this chapter was to report the research results of Study I and the following discussion. The chapter commenced by presenting a sample and response statistics for the three studies. The results of Study I included descriptive statistics, discriminant validity, construct reliability and validity assessment, and survey response. The results indicate that the Arabic translation of the LOS-27 survey has adequate levels of reliability and validity in line with the original US survey results. The overall average positive rate of composites was 64%. Therefore, the findings indicate that hospital pharmacy staff surveyed in Kuwait have moderate positive perceptions about the organizational learning in their organizations. The next chapter presents the results and discussion of Study II.

## **CHAPTER 9**

### **9 STUDY II: VALIDATION OF ARABIC VERSION OF PHARMACY SURVEY ON PATIENT SAFETY CULTURE AND PERCEPTIONS OF PHARMACY STAFF ABOUT PATIENT SAFETY CULTURE**

#### **9.1 INTRODUCTION**

The previous chapter outlined the research results and discussion of Study I about the validation of the Arabic version of LOS-27 and perceptions of pharmacy staff about organizational learning. Study II aimed to assess the reliability and validity of a translated Arabic language version of the PSOPSC released by the United States Agency for Healthcare Research and Quality (AHRQ) in 2012 and to use this to evaluate staff perceptions of patient safety culture in Kuwaiti hospital pharmacies. The aim of this chapter is to present the results of Study II and the following discussion; this includes a sample and response statistics, a descriptive analysis of the 11 dimensions of PSOPSC, confirmatory factor analysis, construct reliability and validity, and positive response rate of 11 dimensions of PSOPSC and their items.

#### **9.2 SAMPLE AND RESPONSE STATISTICS**

As mentioned in Chapter 8, Section 8.2, the collected sample from the six hospitals served the data analysis for the three studies; Study I, Study II and Study III. Therefore, all the details of sample and response statistics are presented in Chapter 8.

#### **9.3 RESULTS OF STUDY II**

##### **9.3.1 Descriptive Analysis of PSOPSC**

Table 9.1 displays the mean, standard deviation, skewness and kurtosis of each item of the Arabic survey. The mean response values on the individual items are typically greater than four, indicating that the respondents rated the patient safety culture favourably. The highest mean score is for “Staff treat each other with respect”, whereas the lowest is for “We have enough staff to handle the workload”. Most of the indicators exhibit a negative skewness. Overall, the

distribution is moderately to highly skewed as most of the values are either less than -1 or more than 1. Also, the kurtosis is often out the range of -1 and 1. Hence, the data are not normally distributed.

**Table 9.1 Descriptive analysis of PSOPSC**

Dimensions and items of PSOPSC	Mean	S.D.	Kurtosis	Skewness
<b>Physical space and environment</b>				
This pharmacy is well-organized	5.688	1.051	3.048	-1.354
This pharmacy is free of clutter	5.180	1.320	0.504	-0.875
The physical layout of this pharmacy supports good workflow	4.768	1.463	0.018	-0.683
<b>Teamwork</b>				
Staff treat each other with respect	5.908	0.954	2.339	-1.250
Staff in this pharmacy clearly understand their roles and responsibilities	5.750	1.129	1.169	-0.992
Staff work together as an effective team	5.478	1.200	0.441	-0.679
<b>Staff training and skills</b>				
Technicians in this pharmacy receive the training they need to do their jobs	5.513	1.152	1.218	-1.036
Staff in this pharmacy have the skills they need to do their jobs well	5.535	1.132	1.413	-0.977
Staff who are new to this pharmacy receive adequate orientation	5.415	1.166	1.698	-1.038
Staff get enough training from this pharmacy	5.529	1.160	0.108	-0.577
<b>Communication openness</b>				
Staff ideas and suggestions are valued in this pharmacy	4.978	1.263	-0.060	-0.421
Staff feel comfortable asking questions when they are unsure about something	5.404	1.031	-0.490	-0.300
It is easy for staff to speak up to their supervisor/manager about patient safety concerns in this pharmacy	5.316	1.123	0.639	-0.553
<b>Patient counselling</b>				

We encourage patients to talk to pharmacists about their medications	5.265	1.285	0.842	-0.766
Our pharmacists spend enough time talking to patients about how to use their medications	5.154	1.277	1.449	-0.931
Our pharmacists tell patients important information about their new prescriptions	5.467	1.257	2.287	-1.204
<b>Staffing, work pressure, and pace</b>				
Staff take adequate breaks during their shifts	4.471	1.266	0.102	-0.152
We feel rushed when processing prescriptions (r)	4.181	1.353	0.084	0.207
We have enough staff to handle the workload	3.963	1.445	-0.237	-0.296
*Interruptions/distractions in this pharmacy (from phone calls, faxes, customers, etc.) make it difficult for staff to work accurately (r)	4.518	1.339	-0.622	0.034
<b>Communication about prescriptions across shifts</b>				
We have clear expectations about exchanging important prescription information across shifts	5.114	1.177	0.251	-0.456
We have standard procedures for communicating prescription information across shifts	5.268	1.159	0.697	-0.637
The status of problematic prescriptions is well communicated across shifts	5.362	1.128	0.237	-0.654
<b>Communication about mistakes</b>				
Staff in this pharmacy discuss mistakes	5.165	1.280	0.584	-0.683
When patient safety issues occur in this pharmacy, staff discuss them	5.294	1.195	0.127	-0.532
In this pharmacy, we talk about ways to prevent mistakes from happening again	5.410	1.199	0.170	-0.612
<b>Response to mistakes</b>				
Staff are treated fairly when they make mistakes	5.018	1.290	0.645	-0.922
This pharmacy helps staff learn from their mistakes rather than punishing them (r)	4.989	1.238	0.345	-0.552
We look at staff actions and the way we do things to understand why mistakes happen in this pharmacy	5.419	1.085	1.472	-0.893
Staff feel like their mistakes are held against them (r)	4.518	1.339	-0.622	0.034

<b>Organizational learning improvement</b>				
When a mistake happens, we try to figure out what problems in the work process led to the mistake	5.449	1.042	1.832	-0.941
When the same mistake keeps happening, we change the way we do things	5.235	1.110	1.411	-0.833
Mistakes have led to positive changes in this pharmacy.	5.346	1.003	0.747	-0.516
<b>Overall perceptions of patient safety</b>				
This pharmacy places more emphasis on describing medicine or sales than on patient safety	5.690	1.245	0.149	-0.861
This pharmacy is good at preventing mistakes	5.438	1.079	0.495	-0.605
The way we do things in this pharmacy reflects a strong focus on patient safety	4.294	1.145	1.685	-0.861

[r]: Reverse-coded items

Source: Own calculations

### 9.3.2 Confirmatory Factor Analysis (CFA)

#### 9.3.2.1 Indicator Reliability

Factor loadings for each item are presented in Table 3. In our survey, all loadings are observed as being greater than 0.6 except for one. The lowest loading of 0.56 occurred for the item “Interruptions/distractions in this pharmacy make it difficult for staff to work accurately”, whereas the highest loading of 0.89 can be observed for the item “When patient safety issues occur in this pharmacy, the staff discusses them”. The SRMR score demonstrates good fit with a value of 0.072, is it is <0.085 (Kenny 2014; Hair Jr et al. 2016).

**Table 9.2 Factor-loading for each item**

Items	Factor Loading of AHRQ – USA	Factor Loading Arabic Version of Kuwait
<b>Physical Space Environment (PSE)</b> A1. This pharmacy is well organized. A5. This pharmacy is free of clutter. A7. The physical layout of this pharmacy supports good workflow.	0.71 0.87 0.59	0.80 0.87 0.75
<b>Teamwork (TMW)</b> A2. Staff treat each other with respect. A4. Staff in this pharmacy clearly understand their roles and responsibilities. A9. Staff work together as an effective team.	0.81 0.72 0.89	0.83 0.80 0.85
<b>Staffing Training and Skills (STS)</b> A3. Technicians in this pharmacy receive the training they need to do their jobs. A6. Staff in this pharmacy have the skills they need to do their jobs well. A8. Staff who are new to this pharmacy receive adequate orientation. A10. Staff get enough training from this pharmacy	0.84 0.69 0.80 0.94	0.78 0.85 0.84 0.88
<b>Communication Openness (CMO)</b> B1. Staff ideas and suggestions are valued in this pharmacy. B5. Staff feel comfortable asking questions when they are unsure about something. B10. It is easy for staff to speak up to their supervisor/ manager about patient safety concerns in this pharmacy	0.75 0.68 0.80	0.81 0.79 0.84
<b>Patient Counselling (PTC)</b> B2. We encourage patients to talk to pharmacists about their medications. B7. Our pharmacists spend enough time talking to patients about how to use their medications. B11. Our pharmacists tell patients important information about their new prescriptions.	0.52 0.88 0.72	0.81 0.84 0.85
<b>Staffing, Working Pressure and Pace (SPP)</b> B3. Staff take adequate breaks during their shifts. B9. We feel rushed when processing prescriptions. (r) B12. We have enough staff to handle the workload. B16. Interruptions/distractions in this pharmacy (from phone calls, faxes, customers, etc.) make it difficult for staff to work accurately. (r)	0.46 0.76 0.62 0.51	0.72 0.61 0.67 0.56



<b>Communication about Prescription across Shift (CPS)</b> B4. We have clear expectations about exchanging important prescription information across shifts. B6. We have standard procedures for communicating prescription information across shifts. B14. The status of problematic prescriptions is well communicated across shifts.	0.87  0.85  0.72	0.79  0.85  0.86
<b>Communication About Mistakes (CAM)</b> B8. Staff in this pharmacy discuss mistakes. B13. When patient safety issues occur in this pharmacy, staff discuss them. B15. In this pharmacy, we talk about ways to prevent mistakes from happening again.	0.81 0.84  0.76	0.87 0.89  0.85
<b>Response To Mistakes (RTM)</b> C1. Staff are treated fairly when they make mistakes. C4. This pharmacy helps staff learn from their mistakes rather than punishing them. C7. We look at staff actions and the way we do things to understand why mistakes happen in this pharmacy. C8. Staff feel like their mistakes are held against them. (negatively worded)	0.75 0.92  0.68  0.59	0.78 0.76  0.78  0.68
<b>Organizational Learning Improvement (OLI)</b> C2. When a mistake happens, we try to figure out what problems in the work process led to the mistake. C5. When the same mistake keeps happening, we change the way we do things. C10. Mistakes have led to positive changes in this pharmacy.	0.77  0.74  0.60	0.83  0.76  0.80
<b>Overall Prescription of Patient Safety (OPP)</b> C3. This pharmacy places more emphasis on sales than on patient safety. (r) C6. This pharmacy is good at preventing mistakes. C9. The way we do things in this pharmacy reflects a strong focus on patient safety.	0.68  0.72 0.85	0.68  0.88 0.74

[r]: Reverse-coded items

Source: Own calculations

### 9.3.2.2 Discriminant Validity of PSOPSC

Inter-correlations among the 11 dimensions of the Arabic version of PSOPSC were analysed to evaluate the discriminant validity, as seen in Table 9.3. No dimensions displayed a correlation of above 0.85, which indicates the absence of a multicollinearity problem (Sorra and Dyer 2010; Kline 2015). The poorest inter-correlation was 0.29, between “Staffing, Working Pressure and Pace” and

“Communication about Prescription Across Shift”, while the highest inter-correlation was 0.83 between “Teamwork and Staffing, Training and Skills”. All 11 dimensions were statistically significant ( $p < 0.01$ ), and all were positively correlated with the outcome variable “Patient Safety Grade”. The average dimension correlation was 0.51 (ranging from 0.34 to 0.65).

**Table 9.3 Inter-correlations of the 11 Dimensions of PSOPSC**

	1	2	3	4	5	6	7	8	9	10	11	12
1-Physical Support Environment	1	.752**	.730**	.511**	.460**	.355**	.508**	.517**	.445**	.421**	.539**	.487**
2-Teamwork		1	.838**	.627**	.525**	.402**	.657**	.638**	.577**	.542**	.575**	.555**
3-Staffing, Training and Skills			1	.631**	.542**	.391**	.636**	.598**	.549**	.492**	.528**	.505**
4-Communication Openness				1	.513**	.573**	.732**	.695**	.693**	.679**	.692**	.519**
5-Patient Counselling					1	.291**	.506**	.581**	.399**	.404**	.399**	.421**
6-Staffing working Pressure and Peace						1	.291**	.506**	.581**	.399**	.404**	.348**
7-Communcation about Prescription across Shift							1	.447**	.456**	.496**	.457**	.652**
8-Communication About Mistakes								1	.774**	.646**	.637**	.598**
9-Response to Mistakes									1	.777**	.739**	.536**
10-Organizational Learning Improvement										1	.749**	.529**
11-Overall Prescription Patient safety											1	.580**
12- Patient safety grade												1

\*\* Correlation is significant at the 0.01 level (2-tailed).

Source: Own calculations

### 9.3.2.3 Construct Reliability

Construct reliability analysis, using Cronbach's alpha ( $\alpha$ ), was determined for 11 dimensions to ensure that individuals responded consistently to questions associated with a certain construct, as shown in Table 9.4. All dimensions have a Cronbach's alpha of greater than 0.7, with the exception of two dimensions, "Overall Prescription of Patient Safety" (with  $\alpha=0.65$ ), and "Staffing, Working Pressure and Pace" (with  $\alpha=0.52$ ). The dimension "Staffing Training and Skills" achieved the highest Cronbach's alpha of 0.85.

**Table 9.4 Cronbach's  $\alpha$  and Positive Response Rate of PSOPSC**

No.	All Dimensions of PSOPSC	Cronbach's $\alpha$ of <b>AHRQ – USA</b> Questionnaire	Cronbach's $\alpha$ of <b>Kuwait</b> Questionnaire	Positive Response Rate / <b>AHRQ – USA %</b>	Positive Response Rate / Arabic Version Kuwait %
1-	<b>Physical Space Environment (PSE)</b> A1. This pharmacy is well organized. A5. This pharmacy is free of clutter. A7. The physical layout of this pharmacy supports good workflow.	0.76	0.73	72 84 67 65	77 92 73 65
2-	<b>Teamwork (TMW)</b> A2. Staff treat each other with respect. A4. Staff in this pharmacy clearly understand their roles and responsibilities. A9. Staff work together as an effective team.	0.85	0.77	81 79 81 82	87 93 85 83
3-	<b>Staffing Training and Skills (STS)</b> A3. Technicians in this pharmacy receive the training they need to do their jobs. A6. Staff in this pharmacy have the skills they need to do their jobs well. A8. Staff who are new to this pharmacy receive adequate orientation. A10. Staff get enough training from this pharmacy	0.89	0.85	79 81 86 72 77	84 83 86 83 82

4-	<b>Communication Openness (CMO)</b> B1. Staff ideas and suggestions are valued in this pharmacy. B5. Staff feel comfortable asking questions when they are unsure about something. B10. It is easy for staff to speak up to their supervisor/manager about patient safety concerns in this pharmacy	0.79	0.74	87	76
				81	66
				91	80
				88	80
5-	<b>Patient Counselling (PTC)</b> B2. We encourage patients to talk to pharmacists about their medications. B7. Our pharmacists spend enough time talking to patients about how to use their medications. B11. Our pharmacists tell patients important information about their new prescriptions.	0.74	0.78	90	77
				92	73
				86	74
				93	85
6-	<b>Staffing, Working Pressure and Pace (SPP)</b> B3. Staff take adequate breaks during their shifts. B9. We feel rushed when processing prescriptions. (r) B12. We have enough staff to handle the workload. B16. Interruptions/distractions in this pharmacy (from phone calls, faxes, customers, etc.) make it difficult for staff to work accurately. (r)	0.68	0.52	41	36
				56	50
				14	31
				56	38
				40	27
7-	<b>Communication about Prescription across Shift (CPS)</b> B4. We have clear expectations about exchanging important prescription information across shifts. B6. We have standard procedures for communicating prescription information across shifts. B14. The status of problematic prescriptions is well communicated across shifts.	0.85	0.78	81	76
				84	72
				78	77
				81	79

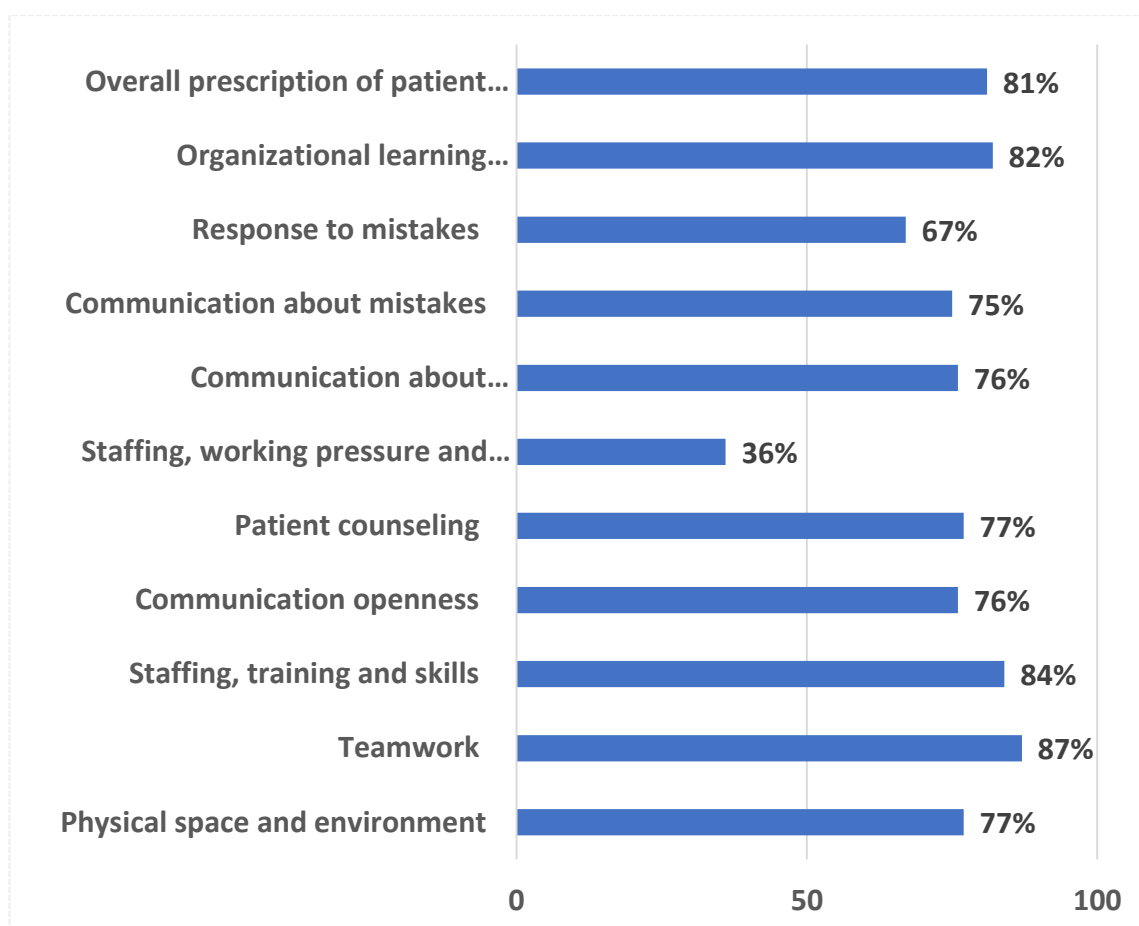
8-	<b>Communication About Mistakes (CAM)</b> B8. Staff in this pharmacy discuss mistakes. B13. When patient safety issues occur in this pharmacy, staff discuss them. B15. In this pharmacy, we talk about ways to prevent mistakes from happening again.	0.84	0.83	79	75
				74	71
				84	76
				81	79
9-	<b>Response To Mistakes (RTM)</b> C1. Staff are treated fairly when they make mistakes. C4. This pharmacy helps staff learn from their mistakes rather than punishing them. C7. We look at staff actions and the way we do things to understand why mistakes happen in this pharmacy. C8. Staff feel like their mistakes are held against them. (r)	0.83	0.74	79	67
				80	44
				84	72
				84	69
				69	85
10-	<b>Organizational Learning Improvement (OLI)</b> C2. When a mistake happens, we try to figure out what problems in the work process led to the mistake. C5. When the same mistake keeps happening, we change the way we do things. C10. Mistakes have led to positive changes in this pharmacy.	0.76	0.71	83	83
				90	87
				82	80
				79	81
11-	<b>Overall Prescription of Patient Safety (OPP)</b> C3. This pharmacy places more emphasis on sales than on patient safety. (r) C6. This pharmacy is good at preventing mistakes. C9. The way we do things in this pharmacy reflects a strong focus on patient safety.	0.79	0.65	84	81
				80	79
				85	81
				86	82

[r]: Reverse-coded items

Source: Own calculations

### 9.3.3 Positive Response Rate

The positive response rate for the 11 dimensions is shown in Table 9.4 and Figure 9.1 (ranging from 36% to 87%); the overall average positive response rate was 74%. The lowest positive response rate of the dimension was “Staffing, Work Pressure and Pace” (36%), while the highest positive response rate was for the dimension “Teamwork” (87%). The positive response rate for the items ranged from 27% to 93%. The highest positive response rate for the item “Staff treat each other with respect” achieved 93%, whereas the lowest positive response rate was for the item “Interruptions/distractions in this pharmacy make it difficult for staff to work accurately” (27%).



**Figure 9.1 Positive Response Rate of the Arabic Version of PSOPSC**

Source: Own calculations

## 9.4 DISCUSSION

To the best of our knowledge, this represents the first study to use PSOPSC to explore patient safety culture in hospital pharmacy settings in the Arabic language

in Kuwait. Furthermore, this is the first study to report data on staff perceptions concerning patient safety culture in Kuwaiti hospital pharmacies.

#### **9.4.1 Discussion on CFA of PSOPSC**

The results suggest that the questionnaire has an adequate degree of reliability as 9 of the 11 dimensions demonstrated a Cronbach's alpha ( $\alpha$ ) > 0.7. The two dimensions with a Cronbach's alpha of less than 0.7 were "Overall Prescription of Patient Safety" ( $\alpha = 0.65$ ) and "Staffing, Working Pressure and Pace" ( $\alpha=0.52$ ). In the 2012 PSOPSC in the United States of America (USA), all dimensions reported a Cronbach's alpha of greater than 0.7, with the exception of "Staffing, Working Pressure and Pace" with an  $\alpha=0.68$ . The dimension "Staffing, Training and Skills" achieved the highest Cronbach's alpha of 0.89. It may therefore be observed that, for all dimensions, the construct validity was adequate. The moderate to slightly significant correlations suggest that it is possible that no two dimensions measure the same construct; indeed, no dimensions demonstrated an inter-correlation above 0.85. However, a reported correlation of 0.83 could be observed between the dimensions "Teamwork" and "Staffing, Training and Skills", but it is possible that the degree of correlation with other dimensions was moderate to high, hence eliminating or unifying these dimensions is not appropriate.

The SRMR score also displayed a relatively good fit with a value of 0.072. Taking into account the factor loadings, all loadings were observed as being greater than 0.6 in this analysis, except for one item. It may therefore be noted that all variables had a strong or fairly strong association with the factor. Certainly, the lowest factor loading was 0.56, reflecting a moderately strong association of the variable with the factor. In contrast, the lowest factor loading of the US survey was 0.46. From this perspective, this research has contributed to the field by establishing sufficient psychometric evidence to suggest that it is appropriate for use in an Arabic setting, which addresses the second research question of this research, "To what extent the translated Arabic version of the PSOPSC is reliable and valid instrument to be used in the Arab context?"



#### **9.4.2 Discussion on Positive Response Rate of PSOPSC**

This study has identified substantial variability in the percentage of positive responses across 11 dimensions. Indeed, our positive response rate by dimensions ranged from 36% to 87%. The lowest positive response rate was for “Work Pressure and Pace” with 36%, showing that the respondents feel that staff allocation is not suitable to address patient safety related workload. This is consistent with the argument of Amponsah-Tawaih and Adu (2016), that high work pressure and safety behaviour are negatively correlated. These results are consistent with studies from Malaysia (Sivanandy et al. 2016), China (Jia *et al.* 2014) and the USA (Westat, 2012), where the dimension “Staffing, Work Pressure and Pace” received the lowest positive response rate of 41%, 50% and 41% respectively.

The highest response rate was 87% for “Teamwork”, which suggests that Kuwaiti hospital pharmacies do not depend on individuals, but instead foster good teamwork. Also, the highest response score for the dimension "Teamwork" is similar to that in the research undertaken in Malaysia (Sivanandy et al. 2016), China (Jia *et al.* 2014) and the USA (Westat, 2012), with response scores of 87%, 84% and 81%, respectively. Our results are in accordance with those reported in the literature, that teamwork amongst healthcare staff is a crucial component of a patient safety culture and a fundamental component for reducing medical errors (Singer and Vogus 2013). Also, our results are consistent with a study conducted by Singer et al. (2009b), which found that there is a relationship between teamwork and enhancing safety culture. Teamwork is therefore important for patient care and problem-solving activities to keep a safe environment. Many studies show that greater team functioning is correlated with favourable patient outcomes (Bower et al. 2003; Davenport et al. 2007) and cost economies (Grumbach and Bodenheimer 2004).

The second highest response score was for “Staffing, Training and Skills”. This can be explained by the fact that there is a mandatory training programme for new pharmacists and technicians in public hospital pharmacies; there is also a national job training and education project for pharmacists under the Kuwait Institute for Medical Specializations (KIMS). These results are consistent with

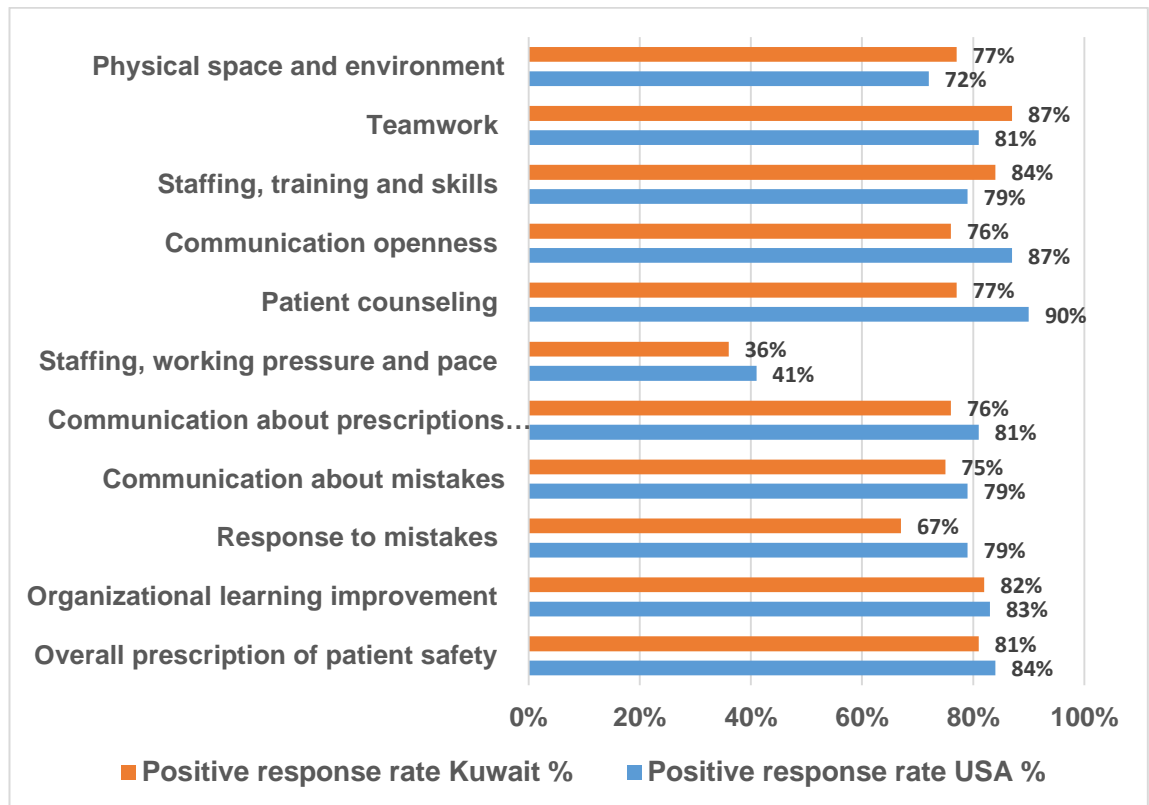
those reported in the literature, where Worsley et al. (2016) maintain that improving skills and training in healthcare organizations leads to a sustained change in quality and safety projects. Flin and Patey (2009) argue that applying training programmes to healthcare providers may essentially help to improve the safety culture by shifting the norms of acceptable behaviour.

The third highest response score was for “Organizational Learning Improvement” with 83%. This confirms the results of Study I, which showed that hospital pharmacy staff in Kuwait have a positive perception about organizational learning. The response score for the dimension “Organizational Learning Improvement” is similar to that in the research undertaken in Malaysia (Sivanandy et al. 2016), China (Jia et al. 2014) and the USA (Westat 2012a), with response scores of 77%, 84% and 83%, respectively.

The positive response score by individual items ranged from 27% for “Interruptions/distractions in this pharmacy make it difficult for staff to work accurately”, to 93% for “Staff treat each other with respect”. The response score of the lowest item “Interruptions/distractions in this pharmacy make it difficult for staff to work accurately”, is close to that in the research undertaken in Malaysia (Sivanandy et al. 2016), China (Jia et al. 2014) and the USA (Westat 2012a), with response scores of 31%, 37% and 40%, respectively; this can be explained by this item being negatively formulated. The response score of the highest item, “Staff treat each other with respect” was slightly lower compared to other research undertaken in Malaysia (Sivanandy et al. 2016), China (Jia et al. 2014) and the USA (Westat 2012a), with response scores of 89%, 86% and 79%, respectively. Moreover, the percentage of staff who rated the level of patient safety as “Good”, “Very good”, or “Excellent” was 93% in our study, very close to the US score of 95% (Westat 2012a), and higher than a Chinese study that had a score of 79% (Jia et al. 2014).

Our overall average positive response score was 74% compared to research undertaken in Malaysia (Sivanandy et al. 2016), China (Jia et al. 2014) and the USA (Westat 2012a), with positive response scores of 67%, 71% and 78%, respectively. A higher positive response rate on a survey measuring safety attitudes exhibits an adequate level of care and awareness observed by staff in

Arabic pharmacy settings concerning patient safety. Our results also confirm that the percentages of positive response rates by dimensions of the Arabic version were close to the original/US version, as shown in Figure 9.2.



**Figure 9.2 Positive Response Rate of the Arabic Version of PSOPSC vs USA Version**

Source: Own calculations

Therefore, the overall positive response rate of 74% achieved in this study is well within satisfactory limits. Nordén-Hägg et al. (2010) maintain that if  $\geq 80\%$  of the respondents report positive responses on a specific item or set of items, then there is a strong positive consensus in that setting. A score below 60% is considered as being in the “needs improvement” range. In turn, negative formulated questions should be 20% or 40%. Moreover, Jia *et al.* (2014) argue that  $\geq 60\%$  provides a threshold for which the safety culture can be considered acceptable.

### 9.4.3 New Contribution

This study will be helpful for Arabic pharmacy staff in providing a safer environment for patients in Arabic pharmacies by identifying the areas that need

to be improved and the areas that are already effective. It will also increase awareness of the importance of a patient safety culture in hospital pharmacy settings in this geographical context. Researchers can also use it as a basis to develop and test the survey in other languages.

#### **9.4.4 Limitations and Recommended Further Study**

The study has several limitations. First, the response rate (59%) was substantially lower than that observed in three similar studies in the USA (Westat 2012c), China (Jia et al. 2014), and Malaysia (Sivanandy et al. 2016), which reported response rates of 75%, 84% and 93%, respectively. Second, the hospitals included in the study were not particularly amenable to providing their data, potentially because they were concerned about whether it would be safe to do so and whether the research would compromise their public reputation. Therefore, meetings and mediation were frequently required in order to receive permission from the hospitals' authorities, a time-consuming affair. Third, despite its low cost and speed of application, self-administered surveys may not precisely reflect respondents' perceptions. Finally, the survey is an Arabic version of PSOPSC and therefore cannot be generalized to countries with other languages. Further research is required to evaluate the translated version's applicability in Arabic pharmacy settings. That being said, researchers can make use of this study to further explore the perceptions of pharmacists in Arabic regions regarding patient safety culture.

### **9.5 CHAPTER SUMMARY**

This chapter highlighted the research results and discussion of Study II, which assessed the reliability and validity of the Arabic version of PSOPSC, to evaluate staff perceptions of patient safety culture in Kuwaiti hospital pharmacies. The results of the sample and response statistics, descriptive analysis of the 11 dimensions, and confirmatory factor analysis of PSOPSC were presented. The results indicated that the Arabic version of the PSOPSC survey was found to be reliable and valid, and suggested a favourable perception towards the patient safety culture. Further, although staff clearly understood their roles and responsibilities, there was a lack of adequate staff to handle the workload. The new contribution, limitations and recommended further research were presented.

The next chapter presents the results and discussion of Study III, which is the relationship between the organizational learning and patient safety culture in hospital pharmacy settings.

## **CHAPTER 10**

### **10 STUDY III: THE RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING AND PATIENT SAFETY CULTURE IN HOSPITAL PHARMACY SETTINGS**

#### **10.1 INTRODUCTION**

Chapters 8 and 9 outlined the research results obtained from Study I and Study II. These studies tested the reliability and validity of the Arabic version of LOS-27, and the Arabic version of PSOPSC to evaluate staff perceptions about organizational learning and patient safety culture in Kuwaiti hospital pharmacies. This chapter presents the results of Study III and the following discussion. The summary results of the descriptive analysis of the LOS-27 and PSOPSC dimensions are presented. The results of a complete model analysis are presented<sup>1</sup>. In addition, the results of the explorative model that include the Fornell-Larcker criterion and outer loading for the measurement model and path coefficient,  $R^2$  and p-value for inner model are presented. The results of a multi-group analysis are outlined. All the results of Study III are discussed in detail in this chapter.

#### **10.2 SAMPLE AND RESPONSE STATISTICS**

As mentioned in Chapter 8, Section 8.2.1, the collected sample from the six hospitals served our three studies; Study I, Study II and Study III. Therefore, all the details of sample and response statistics are presented in Chapter 8.

#### **10.3 RESULTS OF STUDY III**

##### **10.3.1 Descriptive Analysis of LOS-2 and PSOPSC**

A descriptive analysis of LOS-27 items is presented in Chapter 8, Section 8.2.2 with the results and discussion of Study I. The descriptive analysis of PSOPSC items is presented in Chapter 9, Section 9.2.2 with the results and discussion of

---

<sup>1</sup> These include the items' loading, composite reliability and average variance extracted (AVE) for the first order of measurement model, and the dimensions' weights and variance inflation factor (VIF) for the second order measurement model, and the path coefficient,  $R^2$  and p-value for the inner model.

Study II. These results are also summarized in this chapter. The mean response values on the items of the LOS-27 were greater than 4, except for some aspects related to time of reflection and information transfer, which showed mean scores that were slightly greater than 3. Similarly, the mean response values on the individual items of the PSOPSC were typically much greater than 4, indicating that the respondents rated the patient safety culture as relatively favourable. Partial Least Square-Structural Equation Modelling (PLS-SEM) is a non-parametric statistical method, so it does not require data to be normally distributed (Hair Jr et al. 2016). Since most of the values lie between either -1 and -0.5 or 0.5 and 1, overall, the distribution can be said to be moderately skewed. In regards to the kurtosis, the values are often outside the reference range from -1 to 1.

### **10.3.2 The Complete Model**

The results of the complete model are presented in two steps: the measurement model that consists of first and second-order models, and the inner/structural model.

#### **10.3.2.1 Measurement Model of Complete Model**

The results of the first-order construct measurements in the complete model are summarized below in Table 10.1. Regarding the loading, five items were deleted as they had a low loading: these are reported in Table 10.1. When the two surveys LOS-27 and PSOPSC were separately validated (using SPSS software and discussed in Chapters 8 and 9), one item was deleted (supportive learning environment) because the discriminant validity was fulfilled in PLS-SEM only. Regarding factor loadings that are 0.7 or higher are deemed recommendable (Hair Jr et al. 2016), although some researchers claim that a result of 0.4 or higher indicates that the item's relationship to the *a priori* composite is acceptable (Matsunaga 2010). Although some loadings are still slightly below the critical value of 0.7<sup>2</sup>, they were included for the construct measurement because they displayed acceptable values for composite reliability and the average variance extracted (AVE). Composite reliability, should be higher than 0.6 and the AVE is

---

<sup>2</sup> These items are: "This pharmacy experiments frequently with new product/service offerings", "There is simply no time for reflection in this pharmacy", "We feel rushed when processing prescriptions", and "This pharmacy places more emphasis on sales than on patient safety",

should be higher than 0.5 (Hair Jr et al. 2016). All the composite reliability of constructs were higher than the critical value of 0.6. Also, all the AVE of constructs were found to be higher than the critical value of 0.5.

**Table 10.1 Evaluation of Reflective Construct Measurements (First-Order)**

Items	Loading	Composite reliability	Average variance extracted (AVE)
<b>Critical value</b>	<b>&gt; 0.7</b>	<b>&gt;0. 6</b>	<b>&gt; 0.5</b>
<b>Supportive learning environment (SLE)</b> - In this pharmacy, people value new ideas - Differences in opinions are welcomed in this pharmacy - In this pharmacy, people are open to alternative ways of getting work done - People in this pharmacy are eager to share information about what doesn't work as well as to share information about what does work - This pharmacy engages in productive conflict and debate during discussions - In this pharmacy, we frequently identify and discuss underlying assumptions that might affect key decisions - If you make a mistake in this pharmacy, it is often held against you ( <i>r</i> )	0.83 0.85 0.86 0.86 0.86 0.82 Deleted	0.94	0.72
<b>Management that reinforce learning (MRL)</b> - My manager establishes forums for and provides time and resources for identifying problems and organizational challenges - My manager establishes forums for and provides time and resources for reflecting and improving on past performance - My manager listens attentively - My manager invites input from others in discussions	0.91 0.92 0.91 0.92	0.95	0.84
<b>Experimentation (EXP)</b> - This pharmacy experiments frequently with new product/ service offerings - This pharmacy experiments frequently with new ways of working - This pharmacy frequently employs pilot projects or simulations when trying out new ideas - This pharmacy has a formal process for conducting and evaluating experiments or new ideas	0.69 0.88 0.86 0.78	0.88	0.65
<b>Training (TRN)</b>		0.91	0.78



- Experienced employees in this pharmacy receive training when shifting to a new position	0.92		
- Experienced employees in this pharmacy receive training when new initiatives are launched	0.94		
- Newly hired employees in this pharmacy receive adequate training	0.79		
<b>Information transfer (INT)</b> - This pharmacy has forums for meeting with and learning from: Experts from outside the organization - This pharmacy has forums for meeting with and learning from: Experts from other departments/ teams/divisions - This pharmacy has forums for meeting with and learning from: Customers/clients - This pharmacy regularly conducts post audits, after-action reviews, and debriefings	0.78  0.86 0.71  0.81	0.87	0.63
<b>Time for reflection (TFR)</b> - There is simply no time for reflection in this pharmacy (r) - In this pharmacy, people are too busy to invest time in improvement	0.46 0.94	0.69	0.55
<b>Information collection (INC)</b> - This pharmacy frequently compares its performance to: Best-in-class organizations - This pharmacy frequently compares its performance to: Other similar pharmacy - This pharmacy consistently collects information on technological trends	0.87  0.87 0.79	0.88	0.71
<b>Physical space environment (PSE)</b> - This pharmacy is well organized. - This pharmacy is free of clutter. - The physical layout of this pharmacy supports good workflow	0.79 0.88 0.74	0.85	0.65
<b>Teamwork (TMW)</b> - Staff treat each other with respect - Staff in this pharmacy clearly understand their roles and responsibilities - Staff in this pharmacy clearly understand their roles and responsibilities	0.81 0.81  0.86	0.86	0.68
<b>Staffing training and skills (STS)</b> - Technicians in this pharmacy receive the training they need to do their jobs - Staff in this pharmacy have the skills they need to do their jobs well - Staff who are new to this pharmacy receive adequate orientation	Deleted  0.85  0.83 0.88	0.90	0.76

- Staff get enough training from this pharmacy			
<b>Communication openness (CMO)</b> - Staff ideas and suggestions are valued in this pharmacy - Staff feel comfortable asking questions when they are unsure about something - It is easy for staff to speak up to their supervisor/ manager about patient safety concerns in this pharmacy	0.80 0.80 0.83	0.85	0.66
<b>Patient counselling (PTC)</b> - We encourage patients to talk to pharmacists about their medications - Our pharmacists spend enough time talking to patients about how to use their medications - Our pharmacists tell patients important information about their new prescriptions	0.818 0.827 0.849	0.87	0.69
<b>Staffing, working pressure and pace (SPP)</b> - Staff take adequate breaks during their shifts - We feel rushed when processing prescriptions (r) - We have enough staff to handle the workload - Interruptions/distractions in this pharmacy (from phone calls, faxes, customers, etc.) make it difficult for staff to work accurately (r)	0.80 0.54 0.84 Deleted	0.74	0.50
<b>Communication about prescription across shift (CPS)</b> - We have clear expectations about exchanging important prescription information across shifts - We have standard procedures for communicating prescription information across shifts - The status of problematic prescriptions is well communicated across shifts	0.80 0.83 0.85	0.87	0.69
<b>Communication about mistakes (CAM)</b> - Staff in this pharmacy discuss mistakes - When patient safety issues occur in this pharmacy, staff discuss them - In this pharmacy, we talk about ways to prevent mistakes from happening again	0.86 0.88 0.85	0.90	0.75
<b>Response to mistakes (RTM)</b> - Staff are treated fairly when they make mistakes - This pharmacy helps staff learn from their mistakes rather than punishing them - We look at staff actions and the way we do things to understand why mistakes happen in this pharmacy - Staff feel like their mistakes are held against them (r)	0.80 0.75 0.84 Deleted	0.84	0.64

<b>Organizational learning improvement (OLI)</b> - When a mistake happens, we try to figure out what problems in the work process led to the mistake - When the same mistake keeps happening, we change the way we do things - Mistakes have led to positive changes in this pharmacy	0.88  Deleted 0.85	0.85	0.75
<b>Overall prescription of patient safety (OPP)</b> - This pharmacy places more emphasis on sales than on patient safety ( <i>r</i> ) - This pharmacy is good at preventing mistakes - The way we do things in this pharmacy reflects a strong focus on patient safety	0.67 0.90 0.71	0.81	0.59

[r]: Reverse-coded items

Source: Own calculation

The results of the formative construct measurements (second-order) are reported below in Table 10.2. The outer weight which need to be different than zero, p-value which should be less than 0.05, and VIF which should be less than 5 (Hair Jr et al. 2016). All weights were observed to be significant, p-value < 0.05, and all VIF values were below the critical value of 5.

**Table 10.2 Evaluation of Formative Construct Measurements (Second Order)**

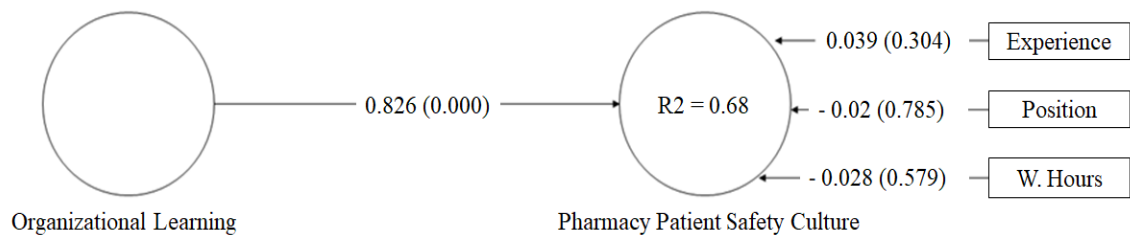
Items	Weight	p-value	Variance inflation factor (VIF)
<b>Critical value</b>		<b>&lt; 0.05</b>	<b>&lt; 5</b>
Supportive learning environment	0.205	0.000	2.59
Management that reinforce learning	0.202	0.000	2.05
Experimentation	0.179	0.000	2.57
Training	0.219	0.000	2.44
Information transfer	0.131	0.000	2.04
Time for reflection	0.171	0.000	1.94
Information collection	0.161	0.000	2.23
Physical space environment	0.111	0.000	2.85

Teamwork	0.126	0.000	4.18
Staffing training and skills	0.112	0.000	3.65
Communication openness	0.130	0.000	3.42
Patient counselling	0.096	0.000	1.71
Staffing, working pressure and pace	0.074	0.000	1.45
Communication about prescription across shift	0.131	0.000	3.35
Communication about mistakes	0.130	0.000	3.30
Response to mistakes	0.123	0.000	3.40
Organizational learning improvement	0.119	0.000	2.90
Overall prescription of patient safety	0.124	0.000	3.27

Source: Own Calculation

#### 10.3.2.2 Inner/structural model of complete model

The path coefficient, which has standardized values between -1 and +1 (values close to +1 and -1 represent strong positive and negative relationships, respectively), the p-values that should be less than 0.05, and  $R^2$  that range between 0 and 1, whereas the higher  $R^2$ , the better (Hair Jr et al. 2016). As shown in Figure 10.1, the path coefficient of organizational learning and pharmacy patient safety culture is high: 0.826, the p-value is significant  $< 0.001$ , and the value of  $R^2$  is high: 0.68. At the same time, the results of control variables were not significant, but working hours (path coefficient of -0.028,  $p > 0.05$ ), staff position (path coefficient of -0.002,  $p > 0.05$ ), and experience were all significant (path coefficient of 0.039,  $p > 0.05$ ). In addition, the SRMR with a value of zero indicating perfect fit, but a value  $< 0.085$  is considered a good fit (Kenny 2014; Hair Jr et al. 2016), in our case SRMR score showed a good global fit of the model with a value of 0.046. Also, the NFI with a value above 0.9 usually represents acceptable fit, in our case NFI score showed an acceptable fit of 0.92.



**Figure 10.1: The Results for the Inner Path Model and the Influence of the Control Variables**

Source: Own calculation

### 10.3.2.3 Multi-group Analysis

The results of the multi-group analysis indicated that there were statistically significant differences between the two groups – the private and the public hospital pharmacies – as shown in Table 10.3. The path coefficient of organizational learning and patient safety culture in public hospital pharmacies is very high (0.852), and the p-value is significant ( $<0.001$ ). The path coefficient of organizational learning and patient safety culture in private hospital pharmacies is also high (0.714), and the p-value is significant ( $<0.001$ ). The difference between the path coefficient of private hospital pharmacies and public hospital pharmacies of -0.138 is significant. This means the influence of organizational learning on patient safety culture in public hospital pharmacies is significantly higher. The effect of the control variables of the two groups, private and public hospital pharmacies, has a minor role in evaluating the model: experience for the private hospital pharmacies (path coefficient of 0.116, p-value is 0.07) is significant, but for public hospital pharmacies (path coefficient is 0.009, p-value is 0.831), it is not significant. The remaining control variables, the working hours and staff position, have no significant influence on the model in the two examined groups.

**Table 10.3 Evaluation of Inner Model of Complete Model with Multi-Group Analysis**

	Path Coefficients (Private)	Path Coefficients (Public)	Path Coefficients-diff (Private – Public)
Organizational learning -> Patient Safety Culture	0.714	0.840	-0.138**

Experience -> Patient Safety Culture	0.166	0.009	0.155*
Position -> Patient Safety Culture	-0.024	-0.004	0.020
W Hours -> Patient Safety Culture	-0.001	-0.017	0.016

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.05$ ; \* $p < 0.1$

Source: Own calculation

### 10.3.3 Explorative Model

After building the complete model, which included the two constructs organizational learning and pharmacy patient safety culture, the manner in which certain first-order dimensions of organizational learning influence certain first-order dimensions of pharmacy patient safety culture was investigated.

#### 10.3.3.1 Measurement model of explorative model

Regarding the evaluation of the discriminant validity of the measurements model of the explorative model, five items were deleted: these are the same as those deleted in the complete model. The results of the Fornell-Larcker criterion are reported in Table 10.4. It was observed that the square root of the AVE for each construct was greater than its highest correlation with any other construct. The results of cross-loading are presented in Table 10.5. All the outer loadings on the associated construct were greater than that of any of their cross-loading.

#### 10.3.3.2 Inner/Structural model of explorative model

Regarding the evaluation of the inner/structural model of the explorative model, the result of the path coefficient, p-value and  $R^2$  (shown in Table 10.6), and several of the organizational learning dimensions have strong connections with the pharmacy patient safety culture dimensions. In general, management that reinforces learning, a supportive learning environment, and training had the strongest effects on PSOPSC dimensions. In addition, it was observed that training had a significant effect on all dimensions of PSOPSC. The strongest influence has been observed as coming from management that reinforces learning on communication openness (path coefficient of 0.455,  $p < 0.001$  and  $R^2$  of 0.61), indicating that the extent to which the management and leadership facilitates learning has a significant effect on the openness of internal communications in relation to patient safety. In contrast, management that reinforces learning has a non-significant effect on the availability of sufficient staff

to handle work pressure (path coefficient of 0.103,  $p > 0.05$ ). Furthermore, the values of  $R^2$  for all endogenous constructs were good and ranged from 0.22 to 0.61. The highest  $R^2$  was for communication openness and the lowest  $R^2$  was for staffing, working pressure and pace.

**Table 10.4 Discriminant Validity of the Construct Measurements of Explorative Model (Fornell-Larcker Criterion)**

	CAM	CMO	CPS	EXP	INC	INT	MRL	OLI	OPP	PSE	PTC	RTM	SLE	SPP	STS	TFR	TMW	TRN
CAM	<b>0.868</b>																	
CMO	0.690	<b>0.813</b>																
CPS	0.780	0.726	<b>0.833</b>															
EXP	0.560	0.603	0.549	<b>0.810</b>														
INC	0.510	0.450	0.504	0.559	<b>0.847</b>													
INT	0.431	0.417	0.438	0.614	0.620	<b>0.792</b>												
MRL	0.641	0.705	0.607	0.603	0.508	0.581	<b>0.917</b>											
OLI	0.628	0.655	0.612	0.483	0.475	0.409	0.616	<b>0.867</b>										
OPP	0.613	0.696	0.621	0.544	0.478	0.386	0.595	0.721	<b>0.770</b>									
PSE_	0.517	0.512	0.508	0.449	0.411	0.405	0.547	0.399	0.553	<b>0.811</b>								
PTC	0.581	0.514	0.505	0.405	0.434	0.344	0.469	0.363	0.416	0.460	<b>0.831</b>							
RTM	0.641	0.670	0.640	0.560	0.507	0.327	0.577	0.732	0.772	0.495	0.387	<b>0.801</b>						
SLE	0.639	0.653	0.673	0.657	0.575	0.546	0.645	0.554	0.655	0.564	0.412	0.618	<b>0.851</b>					
SPP	0.415	0.477	0.373	0.338	0.220	0.265	0.340	0.414	0.352	0.393	0.232	0.280	0.369	<b>0.704</b>				
STS	0.602	0.628	0.640	0.504	0.468	0.407	0.553	0.462	0.534	0.730	0.544	0.565	0.571	0.374	<b>0.877</b>			
TFR	0.508	0.479	0.536	0.545	0.581	0.466	0.508	0.416	0.494	0.489	0.407	0.459	0.578	0.329	0.513	<b>0.755</b>		
TMW	0.642	0.626	0.658	0.533	0.453	0.416	0.561	0.522	0.584	0.754	0.528	0.601	0.604	0.393	0.814	0.594	<b>0.829</b>	
TRN	0.607	0.597	0.618	0.689	0.589	0.530	0.535	0.561	0.579	0.486	0.440	0.594	0.679	0.402	0.561	0.521	0.613	<b>0.888</b>

Source: Own calculation



**Table 10.5 Discriminant Validity of the Construct Measurements of Explorative Model (Cross Loadings)**

0	CAM	CMO	CPS	EXP	INC	INT	MRL	OLI	OPP	PSE	PTC	RTM	SLE	SPP	STS	TFR	TMW	TRN
<b>CAM1</b>	<b>0.862</b>	0.590	0.635	0.470	0.466	0.415	0.539	0.477	0.474	0.460	0.536	0.513	0.533	0.284	0.501	0.373	0.549	0.489
<b>CAM2</b>	<b>0.885</b>	0.652	0.685	0.511	0.381	0.380	0.575	0.559	0.529	0.459	0.533	0.529	0.556	0.407	0.534	0.446	0.596	0.541
<b>CAM3</b>	<b>0.857</b>	0.555	0.706	0.476	0.484	0.334	0.554	0.592	0.588	0.430	0.447	0.623	0.572	0.381	0.463	0.499	0.528	0.547
<b>CMO1</b>	0.493	<b>0.826</b>	0.504	0.562	0.436	0.438	0.606	0.506	0.552	0.462	0.426	0.520	0.606	0.402	0.518	0.414	0.546	0.511
<b>CMO2</b>	0.602	<b>0.767</b>	0.699	0.416	0.277	0.149	0.430	0.506	0.584	0.408	0.393	0.625	0.468	0.336	0.551	0.341	0.539	0.475
<b>CMO3</b>	0.599	<b>0.844</b>	0.592	0.484	0.370	0.401	0.663	0.586	0.568	0.381	0.431	0.508	0.512	0.419	0.435	0.409	0.451	0.472
<b>CPS1</b>	0.593	0.663	<b>0.793</b>	0.431	0.365	0.289	0.486	0.541	0.590	0.441	0.450	0.533	0.530	0.316	0.500	0.383	0.540	0.487
<b>CPS2</b>	0.616	0.539	<b>0.836</b>	0.466	0.427	0.398	0.472	0.463	0.456	0.415	0.408	0.502	0.521	0.237	0.489	0.428	0.557	0.484
<b>CPS3</b>	0.728	0.614	<b>0.869</b>	0.476	0.462	0.405	0.554	0.524	0.511	0.420	0.409	0.562	0.622	0.370	0.521	0.519	0.552	0.566
<b>EXP1</b>	0.341	0.347	0.318	<b>0.687</b>	0.268	0.394	0.342	0.239	0.289	0.287	0.312	0.326	0.422	0.174	0.297	0.255	0.310	0.351
<b>EXP2</b>	0.542	0.586	0.527	<b>0.880</b>	0.535	0.564	0.651	0.504	0.513	0.409	0.372	0.517	0.652	0.366	0.432	0.539	0.516	0.666
<b>EXP3</b>	0.456	0.490	0.442	<b>0.866</b>	0.462	0.526	0.468	0.432	0.486	0.322	0.293	0.484	0.500	0.255	0.308	0.420	0.412	0.600
<b>EXP4</b>	0.445	0.494	0.460	<b>0.792</b>	0.495	0.485	0.441	0.342	0.435	0.420	0.334	0.457	0.522	0.268	0.404	0.496	0.458	0.561
<b>INC1</b>	0.429	0.373	0.442	0.467	<b>0.880</b>	0.484	0.405	0.400	0.422	0.361	0.378	0.462	0.469	0.115	0.415	0.528	0.421	0.498
<b>INC2</b>	0.422	0.278	0.375	0.367	<b>0.875</b>	0.526	0.379	0.377	0.345	0.307	0.368	0.341	0.372	0.193	0.318	0.438	0.354	0.460
<b>INC3</b>	0.441	0.472	0.452	0.565	<b>0.784</b>	0.559	0.495	0.422	0.434	0.366	0.353	0.468	0.596	0.248	0.337	0.498	0.370	0.527
<b>INT1</b>	0.255	0.332	0.296	0.396	0.399	<b>0.792</b>	0.489	0.327	0.285	0.324	0.301	0.169	0.334	0.207	0.289	0.242	0.294	0.341
<b>INT2</b>	0.378	0.372	0.373	0.531	0.528	<b>0.872</b>	0.472	0.370	0.339	0.325	0.253	0.262	0.466	0.221	0.283	0.402	0.346	0.466
<b>INT3</b>	0.144	0.130	0.147	0.354	0.368	<b>0.669</b>	0.291	0.112	0.084	0.136	0.166	0.122	0.226	0.044	0.119	0.173	0.163	0.245
<b>INT4</b>	0.464	0.384	0.453	0.593	0.601	<b>0.821</b>	0.519	0.376	0.386	0.399	0.322	0.387	0.574	0.272	0.351	0.525	0.419	0.526
<b>MRL1</b>	0.554	0.613	0.529	0.484	0.433	0.576	<b>0.912</b>	0.548	0.525	0.504	0.407	0.494	0.509	0.294	0.475	0.438	0.502	0.437
<b>MRL2</b>	0.573	0.603	0.548	0.541	0.466	0.564	<b>0.925</b>	0.543	0.537	0.505	0.424	0.506	0.579	0.270	0.473	0.460	0.474	0.470
<b>MRL3</b>	0.639	0.703	0.597	0.609	0.484	0.471	<b>0.913</b>	0.621	0.571	0.519	0.441	0.606	0.639	0.350	0.532	0.501	0.560	0.573
<b>MRL4</b>	0.578	0.659	0.547	0.569	0.479	0.531	<b>0.919</b>	0.543	0.544	0.477	0.446	0.502	0.631	0.327	0.480	0.462	0.514	0.471
<b>OLI1</b>	0.581	0.564	0.595	0.432	0.404	0.312	0.519	<b>0.863</b>	0.633	0.386	0.315	0.710	0.453	0.336	0.418	0.422	0.480	0.495

<b>OLI3</b>	0.508	0.572	0.467	0.405	0.418	0.397	0.549	<b>0.870</b>	0.616	0.307	0.314	0.561	0.506	0.381	0.332	0.301	0.426	0.477
<b>OPP1R</b>	0.360	0.487	0.440	0.232	0.234	0.106	0.359	0.410	<b>0.672</b>	0.357	0.208	0.448	0.378	0.188	0.407	0.319	0.362	0.316
<b>OPP2</b>	0.629	0.650	0.615	0.576	0.526	0.430	0.578	0.685	<b>0.914</b>	0.548	0.452	0.760	0.684	0.360	0.491	0.516	0.559	0.604
<b>OPP3</b>	0.365	0.444	0.332	0.380	0.271	0.296	0.400	0.537	<b>0.704</b>	0.329	0.239	0.522	0.376	0.241	0.297	0.249	0.397	0.351
<b>PSE1</b>	0.424	0.391	0.407	0.340	0.306	0.305	0.459	0.313	0.397	<b>0.791</b>	0.387	0.364	0.389	0.238	0.471	0.392	0.593	0.287
<b>PSE2</b>	0.496	0.484	0.495	0.418	0.387	0.339	0.458	0.396	0.534	<b>0.883</b>	0.406	0.512	0.542	0.353	0.681	0.469	0.721	0.494
<b>PSE3</b>	0.326	0.362	0.322	0.327	0.299	0.345	0.416	0.250	0.399	<b>0.753</b>	0.325	0.311	0.428	0.355	0.641	0.316	0.505	0.382
<b>PTC1</b>	0.460	0.482	0.427	0.341	0.305	0.238	0.335	0.335	0.364	0.338	<b>0.803</b>	0.380	0.356	0.204	0.375	0.333	0.451	0.405
<b>PTC2</b>	0.458	0.375	0.391	0.327	0.401	0.262	0.359	0.230	0.285	0.389	<b>0.833</b>	0.285	0.293	0.210	0.457	0.318	0.412	0.330
<b>PTC3</b>	0.526	0.426	0.442	0.342	0.374	0.349	0.466	0.339	0.383	0.418	<b>0.857</b>	0.306	0.377	0.158	0.478	0.361	0.454	0.364
<b>RTM1</b>	0.469	0.503	0.496	0.424	0.420	0.297	0.456	0.553	0.560	0.409	0.334	<b>0.798</b>	0.450	0.167	0.463	0.402	0.438	0.466
<b>RTM2</b>	0.423	0.492	0.433	0.442	0.307	0.183	0.372	0.521	0.530	0.272	0.193	<b>0.761</b>	0.434	0.207	0.402	0.257	0.425	0.406
<b>RTM3</b>	0.625	0.605	0.593	0.479	0.475	0.298	0.542	0.670	0.739	0.488	0.383	<b>0.843</b>	0.584	0.301	0.462	0.428	0.565	0.543
<b>SLE1</b>	0.512	0.594	0.548	0.556	0.523	0.531	0.545	0.486	0.567	0.524	0.354	0.520	<b>0.836</b>	0.320	0.455	0.483	0.508	0.592
<b>SLE2</b>	0.591	0.615	0.624	0.536	0.465	0.414	0.568	0.481	0.541	0.491	0.338	0.582	<b>0.854</b>	0.333	0.496	0.514	0.557	0.616
<b>SLE3</b>	0.555	0.526	0.582	0.609	0.494	0.486	0.485	0.499	0.537	0.453	0.342	0.497	<b>0.866</b>	0.303	0.425	0.507	0.526	0.645
<b>SLE4</b>	0.549	0.545	0.545	0.578	0.509	0.454	0.553	0.444	0.583	0.523	0.399	0.524	<b>0.864</b>	0.322	0.514	0.534	0.536	0.610
<b>SLE5</b>	0.556	0.525	0.589	0.520	0.459	0.458	0.557	0.465	0.555	0.440	0.337	0.517	<b>0.863</b>	0.315	0.446	0.479	0.487	0.543
<b>SLE6</b>	0.493	0.526	0.544	0.555	0.485	0.449	0.587	0.451	0.558	0.445	0.332	0.513	<b>0.823</b>	0.304	0.390	0.430	0.463	0.452
<b>SPP1</b>	0.210	0.414	0.216	0.208	0.051	0.077	0.205	0.330	0.277	0.134	0.128	0.283	0.161	<b>0.665</b>	0.161	0.143	0.158	0.194
<b>SPP2R</b>	0.241	0.229	0.218	0.167	0.192	0.133	0.210	0.135	0.157	0.236	0.175	0.073	0.174	<b>0.525</b>	0.258	0.291	0.201	0.150
<b>SPP3</b>	0.386	0.375	0.333	0.311	0.206	0.289	0.294	0.373	0.304	0.394	0.184	0.240	0.382	<b>0.874</b>	0.321	0.271	0.403	0.421
<b>STS2</b>	0.584	0.568	0.570	0.429	0.342	0.273	0.452	0.399	0.493	0.666	0.508	0.485	0.490	0.347	<b>0.870</b>	0.470	0.770	0.501
<b>STS3</b>	0.400	0.498	0.452	0.309	0.336	0.235	0.425	0.351	0.426	0.648	0.418	0.490	0.407	0.233	<b>0.879</b>	0.382	0.628	0.449
<b>STS4</b>	0.519	0.538	0.558	0.436	0.433	0.418	0.524	0.385	0.460	0.636	0.457	0.479	0.503	0.351	<b>0.883</b>	0.488	0.735	0.520
<b>TFR1R</b>	0.271	0.314	0.300	0.227	0.096	0.060	0.255	0.171	0.266	0.228	0.208	0.194	0.262	0.265	0.243	<b>0.591</b>	0.306	0.152
<b>TFR2R</b>	0.468	0.409	0.486	0.538	0.657	0.537	0.477	0.412	0.454	0.469	0.380	0.452	0.559	0.253	0.489	<b>0.889</b>	0.553	0.552

<b>TMW1</b>	0.460	0.503	0.494	0.405	0.293	0.312	0.451	0.389	0.455	0.598	0.363	0.430	0.452	0.253	0.586	0.434	<b>0.815</b>	0.455
<b>TMW2</b>	0.507	0.504	0.550	0.441	0.412	0.316	0.399	0.424	0.457	0.619	0.466	0.549	0.491	0.334	0.705	0.477	<b>0.801</b>	0.498
<b>TMW3</b>	0.615	0.548	0.587	0.476	0.415	0.397	0.533	0.478	0.531	0.657	0.477	0.514	0.550	0.381	0.726	0.555	<b>0.868</b>	0.563
<b>TRN1</b>	0.532	0.529	0.552	0.664	0.536	0.519	0.482	0.488	0.509	0.391	0.391	0.525	0.634	0.359	0.470	0.494	0.515	<b>0.915</b>
<b>TRN2</b>	0.549	0.558	0.567	0.666	0.544	0.539	0.521	0.545	0.540	0.463	0.389	0.571	0.631	0.374	0.515	0.491	0.561	<b>0.934</b>
<b>TRN3</b>	0.534	0.501	0.526	0.501	0.486	0.348	0.418	0.457	0.490	0.436	0.390	0.483	0.541	0.336	0.507	0.401	0.556	<b>0.811</b>

Source: Own calculation

**Table 10.6 Evaluation of Inner/Structure Model of Explorative Model**

	CAM	CMO	CPS	OLI	OPP	PSE	PTC	RTM	SPP	STS	TMW
EXP	0.041	0.139**	-0.008	-0.036	0.065	-0.037	0.019	0.161**	0.000	-0.014	0.018
INC	0.118*	-0.003	0.089	0.116*	0.098*	0.037	0.209**	0.197***	-0.092	0.094	0.035
INT	-0.103	0.143**	0.055	-0.082	0.147**	0.024	-0.046	0.306***	-0.055	-0.039	-0.027
MRL	0.342***	0.455***	0.241***	0.416***	0.270***	0.273***	0.266***	0.296***	0.103	0.242***	0.213***
SLE	0.200***	0.196***	0.302***	0.106	0.320***	0.264***	-0.015	0.233***	0.086	0.135*	0.184**
TFR	0.082*	0.095**	0.118**	-0.001	0.070	0.071	0.095	-0.012	0.195**	0.124**	0.148***
TRN	0.232***	0.188***	0.248***	0.266***	0.182**	0.141*	0.181**	0.215***	0.277***	0.329***	0.333***
R <sup>2</sup>	0.549	0.614	0.555	0.469	0.520	0.391	0.301	0.530	0.225	0.461	0.494

\*\*\* P < 0.001; \*\* P < 0.01; \*P < 0.05

Source: Own calculation

## 10.4 DISCUSSION

The present study assesses the relationship between organizational learning and patient safety culture by administering PSOPSC and LOS-27 to the same participants in pharmacies within hospitals in Kuwait. To the best of our knowledge, this is the first study of this kind.

### 10.4.1 Discussion on Complete Model

The results of the complete model were positive (path coefficient 0.826, the p-value is significant  $<0.001$ , and the value of  $R^2$  is 0.68); this indicates that organizational learning significantly influences patient safety culture in hospital pharmacies settings. These results address the first part of the third research question of this research: 'Does organizational learning influence patient safety culture in private and public hospital pharmacies of Kuwait generally?' The results confirm that the concepts of learning and safety should be viewed as being related to each other, given that safety culture represents "the way safety is done around here", thereby emphasizing the importance of understanding what people actually believe and do (Pronovost and Sexton 2005).

Patankar et al. (2013) argue that safety culture in healthcare and aviation can be strategically enhanced by implementing organizational learning processes. Therefore, the connection between organizational learning and patient safety is rooted in the beliefs people hold about safety and the importance given to safety within an organization. It reflects the true situation in hospitals that is shaped by individual experience and by interacting with and observing peers (Carayon 2006).

The control variables had no significant influence on the model. Including these control variables in the research model means that other path relationships in the model are not affected by these effects. The SRMR score showed good fit with a value of 0.046 and the NFI score showed acceptable fit of 0.92, which is a clear indicator that the model has good explanatory power (Henseler et al. 2016).

#### **10.4.2 Discussion on Multi-group**

The results of the multi-group analysis indicate that the influence of organizational learning on patient safety culture in private and public hospital pharmacies is significant, but the influence in public hospital pharmacies is significantly higher. This is reflected by the difference in the values of the path coefficient, which is 0.138 higher in the case of public hospital pharmacies. Such difference in the impact may be explained by the fact that public hospital pharmacies in Kuwait are large, sophisticated, interested in training and continuing education, and seeking international accreditation; some are also related to university hospitals. Furthermore, the results of the control variables indicate that there was a minor effect on the model, and specifically the experience in private hospital pharmacies was significant, with a path coefficient of 0.116 (p-value of 0.07), but not in public hospital pharmacies. This could be explained by that staff in private hospital pharmacies have a more experienced and more qualified workforce. The rest of the control variables have no significant influence on the model in the two examined groups.

#### **10.4.3 Discussion on Explorative Model**

The estimated strength of the relationship between the latent variables can only be meaningfully interpreted if discriminant validity was established (Henseler et al. 2015). The results of the Fornell-Larcker criterion and cross-loadings indicate that the construct measurement of explorative model is a different concept. The results of the inner explorative model indicate that various dimensions of organizational learning have been found to have a relationship with the various dimensions of the pharmacy patient safety culture. This addresses the second part of the third question of this research: "Which specific dimensions of organizational learning significantly influence which specific dimensions of patient safety culture in hospital pharmacies of Kuwait"?

Specific components of organizational learning, namely training, management that reinforces learning, and supportive learning environment, were found to have the strongest effects on the different patient safety culture dimensions in hospital pharmacy settings, which is consistent with the literature. Moreover, their effects on the pharmacy patient safety culture dimensions indicate that management that

reinforces learning, supportive learning environment, and training were associated with improvements in all dimensions of pharmacy patient safety culture except one; staffing, working pressure and pace, which was not associated with management that reinforces learning and supportive learning environment.

Regarding the effect of management that reinforces learning and supportive learning environment on pharmacy patient safety culture, Mohr (2005) argues that a safety plan has to be one of the priorities of the boards of healthcare organizations. Hence, the leaders and higher management need to create a learning organization in which they integrate a safety intention around error and safety throughout the organization. There is further support for these findings from Singer and Vogus (2013), who argue that the leadership is strongly associated with improving safety culture and safety outcomes.

Mohr (2005) again maintains that leadership for patient safety culture depends on proactive or double-loop learning, where medication errors are seen as an opportunity to enhance organizational learning; this confirms the strong connection between patient safety culture and organizational learning. Moreover, management approaches that reinforce learning create two beneficial effects, specifically, learning and motivation (Khatri et al. 2009). Knowledge is increased by learning from mistakes as much can be learned from employees who report medical errors and examine the causes of the mistakes. Singer et al. (2015) confirm that the role of management and leadership is substantial for promoting a supportive learning environment and implementing learning processes in the context of quality and safety enhancement.

The literature supports that the three levels of supportive learning (environment team characteristics, organizational context of teams, and external environment) enhance safety and quality care (Singer et al. 2015). Also, Choo et al. (2007) argue that psychological safety, which is part of the supportive learning environment, positively affects the quality and safety improvement by raising ideas production and improved problem-solving.

Regarding the impact of skills and training in improving pharmacy patient safety culture, Worsley et al. (2016) maintain that developing skills and training in managing healthcare organizations leads to a sustained change in quality and safety projects; these are desirable skills in a flexible modern healthcare professional. In addition, human factor training can reduce the potential for errors and allow clinical staff to focus directly on improving patient care. Also, Thomas and Galla (2012) emphasized that building a culture of safety is directly associated with team training. Therefore, the significance of training among healthcare professionals is that it directs everyone to do the right thing every time, reducing the probability of mistakes, and allowing clinical staff to focus directly on improving patient care (Worsley et al. 2016).

Regarding the remaining dimensions of organizational learning, information collection, experimentation, information transfer and time for reflection, also showed significant effects on pharmacy patient safety culture dimensions. However, they are less strong than management that reinforces learning, supportive learning and training. Time for reflection had a positive influence on six aspects, namely communication about mistakes, communication openness, communication about prescription across shifts, staffing training and skills, teamwork and staffing, working pressure and pace.

Time for reflection is the extent to which people find time to review their work and invest time in improvement rather than focusing only on production (Singer et al. 2012a). However, it is more about the workload. Lessening the workload on staff provides more time to reflect. Therefore, time pressure raises the potential for errors and explains the failure to commit to safety indicators (Rogers et al. 2004). Singer et al. (2015) argue that time for reflection is substantial to promote proactive and creative problem solving and supports learning for quality and safety improvement.

Information collection had a positive influence on four aspects, namely response to mistakes, organizational learning improvement, patient counselling, and communication about mistakes. Garvin et al. (2008: p.5) explain information collection as “systematically gathering the information from experts and own experience to keep track of competitors, customers and technological trends”.

Information collection is crucial part of organizational learning process (Garvin et al. 2008; Singer et al. 2012a; Singer et al. 2015). Also, there is a link between information collection and patient counselling, where patient counselling provides information to the patient that is collected from experts (Yang et al. 2016).

Information transfer was associated with three aspects; communication openness, response to mistakes and overall prescription of patient safety. According to the results of a recent study conducted by Gaureanu et al. (2018), this demonstrated that knowledge acquisition and structuring about the organizational safety culture can further the elaboration and implementation of appropriate preventive-corrective measures in the organization. On the other hand, Wu (2018) argues that incomplete information transfer may hinder the improvement of patient safety.

Experimentation was restricted to only communication openness and response to mistakes. Rivard et al. (2013) maintain that experimenting with new approaches promotes learning by evaluating and refining an organization's overall approach to quality improvement for patient safety. A discussion of the results explained the areas of concern towards the improvement of the safety culture in pharmacy settings; this will be useful in designing training courses for the practicing pharmacist that target specific domains to improve the overall patient safety culture.

#### **10.4.4 New Contribution**

The adaptation of both instruments for use in a Kuwait hospital pharmacy context is an important development for the assessment and improvement of organizational learning and pharmacy patient safety culture in this country. Therefore, this study is an attempt to bridge this gap by exploring the relationship between the dimensions of organizational learning and the dimensions of pharmacy patient safety culture. In addition, an attempt has been made to highlight which elements of organizational learning dimensions drive which components of the pharmacy patient safety culture.

The present study will be useful for Arabic hospital pharmacies in understanding the current state of safety culture and the extent of learning within organizations.



Furthermore, this study will assist hospital pharmacies in understanding the manner in which organizational learning impacts safety culture in healthcare settings. This information will enable hospital pharmacies in the Arabic context to gain meaningful insights into the specific components that need to be developed in the area of making an organization a learning organization. These components are likely to have maximum impact on the improvement of the patient safety culture based on the interrelationship between the two concepts and their specific dimensions established by this study. This study will further assist researchers who can adopt a similar method, using this research work as a base to test other variables on the same grounds in conjunction with patient safety to establish its relationship with certain other variables. Similar research can also be conducted in other countries.

#### **10.4.5 Limitations and Recommended Further Research**

There is a limitation to this study. Although the PLS-SEM analysis confirmed adequate reliability, validity and robustness in the model under study, this study is the first of its kind to have attempted to explore the relationship between organizational learning and patient safety culture in hospital pharmacy settings. Further studies will be required to determine the extent to which our findings are generalizable. In addition, the extent to which, in practice, changes to organizational learning impact on patient safety also needs to be tested.

#### **10.5 CHAPTER SUMMARY**

This chapter highlighted the research results and discussion of Study III that explored the relationship between organizational learning and patient safety culture in hospital pharmacy settings as determined by the LOS-27 and PSPOSC instruments. It also explored how dimensions of organizational learning relate to dimensions of pharmacy patient safety culture. The results indicated a significant positive relationship between organizational learning and patient safety culture in hospital pharmacy settings. In addition, several dimensions of organizational learning showed significant links to the various dimensions of the pharmacy patient safety culture. Specifically, training, management that reinforces learning, and supportive learning environment, had the strongest effects on the pharmacy patient safety culture dimensions.

The next chapter outlines the overall discussion of the three studies, Study I, Study II and Study III, the conclusions of the three studies, contribution, limitations of the research and the agenda for future research.

## **PART FIVE CONCLUSIONS**

The purpose of this final part of the thesis is to summarize the results, present the conclusions, and highlight the contributions and practical implications from this research project. This part includes Chapter 11 only.

Chapter 11: The conclusions chapter summarizes the previous chapters of this thesis. This chapter revisits the main aim and research questions, presents the overall discussion and conclusions, identifies the theoretical, method and contextual contribution and practical implications, points out the limitations of this research, and proposes an agenda for future research.

# **CHAPTER 11**

## **11 CONCLUSIONS**

### **11.1 INTRODUCTION**

The previous chapter presented and discussed the results of Study III regarding the relationship between organizational learning and patient safety culture in hospital pharmacy settings in Kuwait. The current chapter offers an overall summary and summarizes the previous chapters of this thesis. This chapter first revisits the main aim and research questions, summarizes the findings and presents the overall discussion. Then, it presents the conclusions of the three studies and the overall conclusions before continuing to present the contribution of the research as theoretical, method and contextual contributions. Fourth, it identifies the practical implications. Fifth, it points out the limitations of this research of which scholars need to be aware, and finally, the chapter concludes by discussing the proposed agenda for future research.

The next section briefly revisits the main aim and research questions of the research, summarizes the results of the research reported and discussed in Chapters 8, 9 and 10.

### **11.2 RESEARCH SUMMARY AND FINDINGS**

The main aim of the current research was to assess the reliability and validity of an Arabic version of the LOS-27 and the PSOPSC, and use this to evaluate staff's perceptions about patient safety culture and organizational learning in public and private hospital pharmacies of Kuwait. The research also intended to explore the relationship between organizational learning and patient safety culture in hospital pharmacy settings as determined by LOS-27 and PSOPSC questionnaires. In addition, it attempted to determine the relationship between the different dimensions of organizational learning and patient safety culture in hospital pharmacies and whether it is significant. Finally, it aimed to assess if there are statistically significant differences between private and public hospital pharmacies.

The research questions for this research were:

1. To what extent the translated Arabic version of the LOS-27 is a reliable and valid instrument to be used in the Arab context?
2. To what extent the translated Arabic version of the PSOPSC is a reliable and valid instrument to be used in the Arab context?
3. Does organizational learning influence patient safety culture in private and public hospital pharmacies in Kuwait, and which specific dimensions of organizational learning significantly influence which specific dimensions of pharmacy patient safety culture?

In terms of the research methods used to answer the research questions, a quantitative method study design was employed through a cross-sectional study in six hospital pharmacies in Kuwait (three from the largest public hospital pharmacies and three from the largest private hospital pharmacies). Sample and response statistics and descriptive analysis were achieved by using Excel 2013 and SPSS. To answer the first and second research questions, the two surveys were translated based on the Agency for Healthcare Research and Quality (AHRQ) guidance (Westat 2012b). A pilot study was conducted to evaluate an initial, preliminary version of the translated surveys; CFA (which includes factor loading, internal reliability and inter-correlations among survey dimensions) was assessed using SPSS, version 22. In addition, the positive response rate for the dimensions and each item were assessed using Excel 2013. To answer the third research question, the Smart-PLS 3 software (Ringle et al. 2015) was used to evaluate the complete and explorative model, which consisted of the measurements of the different dimensions and the structural model.

The current study provides three main findings. First, regarding LOS-27, the internal consistency of all dimensions was  $>0.7$ , except for one. All factor loadings were above 0.7 for all items. The SRMR score showed a good fit with a value of 0.08 and lies below the critical conservative value of 0.085. The inter-correlation among dimensions ranged from 0.34 to 0.68. The results indicated that the Arabic translation of the LOS-27 questionnaire had adequate levels of reliability and validity in comparison with the original US survey results. The overall average positive rate of dimensions was 64%. Therefore, the findings indicated that the hospital pharmacy staff surveyed in Kuwait have moderate positive perceptions about organizational learning in their organizations.

Second, regarding PSOPSC, the results indicated that 9 of the 11 dimensions had a Cronbach's alpha  $>0.7$  and all factor loadings were greater than 0.6. The SRMR score demonstrated a good fit with a value of 0.072. The inter-correlations among the patient safety dimensions ranged from 0.29 to 0.83. The results highlighted that the Arabic translation of the PSOPSC questionnaire had adequate levels of reliability and validity, consistent with the original AHRQ survey results. The overall average positive response rate of the dimensions was 74%, suggesting that the hospital pharmacy staff surveyed in Kuwait retain a positive perception of the patient safety culture in their organizations.

Third, the reliability and validity of LOS-27 and PSOPSC was the prerequisite for the next step, to test the connection between the organizational learning and pharmacy patient safety culture and their dimensions in the complete and explorative model. However, the results indicated a significant positive relationship between organizational learning and patient safety culture in hospital pharmacy settings. In addition, the results of the multi-group analysis indicated that the influence of organizational learning on patient safety culture in private and public hospital pharmacies is significant, but the influence in public hospital pharmacies is significantly higher. This is reflected by the difference in the values of the path coefficient, which is 0.138 higher in the case of public hospital pharmacies. Several dimensions of the organizational learning showed significant links to the various dimensions of the pharmacy patient safety culture. Specifically, training, management that reinforces learning, and supportive learning environment had the strongest effects on the pharmacy patient safety culture dimensions.

In terms of overall discussion, this study is the first to validate the Arabic language versions of LOS-27 and PSOPSC in hospital pharmacy settings to evaluate the perceptions of pharmacy staff concerning organizational learning and patient safety culture in Kuwait. Furthermore, this is the first study that provides empirical evidence of a link between patient safety culture and organizational learning and their dimensions in hospital pharmacy settings by using the Arabic language versions of LOS-27 and PSOPSC.

As explained in Chapter 7, the perception of pharmacists about organizational learning and patient safety culture is an important basis for identifying the strengths and weaknesses of organizational learning and patient safety culture that can be used to promote patient safety in hospital pharmacy settings. Therefore, this study analyses the positive response rate as it could provide a holistic picture of the perception of pharmacists on various domains. The results of the positive response rate of LOS-27 dimensions indicated that the highest dimensions were management that reinforces learning, supportive learning environment and training. These are fully consistent with the results of Study III that indicated that the training, management that reinforces learning, and supportive learning environment dimensions had the strongest effects on the PSOPSC dimensions; these may be utilized to promote patient safety culture in hospital pharmacy settings.

The next section presents the conclusions of the three studies and the overall conclusions.

### **11.3 CONCLUSIONS OF RESEARCH**

Based on the results of the three studies contained in this thesis, the following conclusions can be drawn:

- I. An Arabic version of the LOS-27 questionnaire was developed and found to have adequate reliability and validity. The results presented a positive response rate for two-thirds of the respondents about organizational learning, which establishes the presence of acceptable learning culture in Kuwaiti hospital pharmacy settings. The results highlighted the areas of concern regarding the improvement of organizational learning in hospital pharmacy settings, which will be helpful in taking actions such as designing training courses for pharmacy staff in specific domains to promote the organizational learning process in Kuwaiti hospital pharmacies.
- II. An Arabic version of the PSOPSC questionnaire was developed and was noted as having adequate reliability and validity. The results demonstrated that pharmacy staff surveyed in Kuwait were positive in their perceptions

regarding the patient safety culture of their organizations, although some areas for improvement were identified. Hospital pharmacists with enhanced perception and a positive view towards patient safety is the basis of actual individual actions that will decrease the number of medication errors. In addition, the results illustrated the areas of concern regarding the improvement of the safety culture in hospital pharmacy settings, which will be useful in planning training sessions for pharmacy staff in specific domains to enhance the overall patient safety culture in Kuwaiti hospital pharmacies.

- III. The results demonstrated that there exists a significant influence of organizational learning on patient safety culture in hospital pharmacies in Kuwait. Several dimensions of organizational learning showed a significant relationship with the various dimensions of the pharmacy patient safety culture. Training, management that reinforces learning, and a supportive learning environment were associated with improvements in all dimensions of pharmacy patient safety culture except one and emerged as particularly important elements; these may be utilized to improve patient safety culture in hospital pharmacy settings. In addition, information collection, experimentation, information transfer and time for reflection showed significant effects on pharmacy patient safety culture dimensions; however, they were less influential than management that reinforces learning, supportive learning and training. The results indicated that the influence of organizational learning on patient safety culture in private and public hospital pharmacies is significant, but the influence in public hospital pharmacies is significantly higher.

In conclusion, the results of the current study show that the Arabic version of LOS-27 and PSOPSC questionnaires have adequate reliability and validity, and pharmacy staff have positive perceptions about organizational learning and patient safety culture in hospital pharmacies of Kuwait, although some areas of improvement were identified. In addition, the framework of this study and the results showed that there exists a significant relationship between organizational learning and patient safety culture in hospital pharmacies in Kuwait, and various dimensions of organizational learning showed a significant relationship with the



various dimensions of the pharmacy patient safety culture; these may be utilized to promote patient safety culture in hospital pharmacy settings.

The next section attempts to offer the potential contribution of this research as theoretical, methodological and contextual contributions.

#### **11.4 CONTRIBUTION OF THE RESEARCH**

The current research provided various contributions to knowledge by identifying the role of organizational learning in promoting patient safety culture within the hospital pharmacy settings of Kuwait. Three overarching theoretical, methodological, and contextual contributions were generated in this thesis which were supported by key contributions provided by the three studies.

##### **11.4.1 Theoretical Contribution**

First, the research contributes to the literature that links organizational learning determined by LOS-27 and patient safety culture determined by PSOPSC in a hospital pharmacy setting; organizational learning was linked to patient safety culture previously in the literature (Eisenlohr et al. 2002; Singer et al. 2012b; Goh et al. 2013; Edwards 2017). To the best of my knowledge, this is the first study that links organizational learning with patient safety culture in a hospital pharmacy setting. In addition, this research also contributes to the literature by identifying which dimensions of organizational learning drive which dimensions of the pharmacy patient safety culture.

##### **11.4.2 Method Contribution**

Second, this research offers a method contribution by combining the two questionnaires, LOS-27 and PSOPSC, on the same participants using a single form to explore the relationship between organizational learning and patient safety culture in a hospital pharmacy setting and their dimensions. In addition, this research would further assist researchers who can adopt similar method, using this research work as a bases to test other variables on the same grounds in conjunction with patient safety to establish its relationship with certain other variables. Similar research can also be conducted in other countries. Researchers can use the Arabic version of LOS-27 and PSOPSC as a basis to

develop and test the same in other languages. This study could be a basis for other research work.

#### **11.4.3 Contextual Contribution**

Third, this research also contributes to the limited literature that examines patient safety culture (Ghobashi et al. 2014; Ali et al. 2018; Alqattan et al. 2018) and organizational learning by considering the context of Kuwait. Only one previous study has examined patient safety culture in Kuwaiti primary care settings (Ghobashi et al. 2014), while only two studies examine this issue in the context of Kuwaiti secondary care settings (Ali et al. 2018; Alqattan et al. 2018). However, this research adopted different instruments to measure patient safety culture in hospital pharmacy settings against the relationship with organizational learning. Therefore, the adaptation of the two questionnaires, LOS-27 and PSOPSC, for use in a Kuwait hospital pharmacy context could be an important development for the assessment and improvement of organizational learning and pharmacy patient safety culture in this country.

The next section attempts to offer potential practical implications that could be implemented to foster and improve the patient safety culture by linking it with organizational learning in the hospital pharmacy setting.

#### **11.5 PRACTICE IMPLICATIONS**

I found that various organizational learning dimensions have a strong impact on various patient safety culture dimensions in hospital pharmacy settings. Specific dimensions of organizational learning, namely training, management that reinforces learning, and supportive learning environment, were found to have the strongest effects on the different patient safety culture dimensions in hospital pharmacy settings. Several strategies could be used to improve pharmacy patient safety culture by implementing many training programs about documenting mistakes, patient counseling, communications about mistakes and handover among staff over different shifts. Other strategies could be implemented to enhance the pharmacy patient safety culture by the support of management for learning through coaching, by offering individuals and groups' feedback about ways to improve specific processes and practices in their pharmacies. The results

also have practice implications for the effectiveness of hospital pharmacies through the dimension of "supportive learning environment" which is consist of three levels: team characteristics, the organizational context of teams, and external environment. Several strategies could be used to improve pharmacy patient safety culture by teamwork. For example, teamwork might be improved through multidisciplinary team training, including use of simulation techniques that provide experiential learning opportunities and allow individuals to "walk in someone else's shoes" to gain understanding and appreciation for other roles and perspectives.

In addition, there is a lack of knowledge about the perceptions of hospital pharmacy staff in Kuwait regarding patient safety culture in their organizations. The Arabic version of PSOPSC could enable the Arabic hospital pharmacy staff to assess current levels of patient safety and thereby identify procedures necessary to enhance learning and improve the areas where they are already doing well.

The next section points out the limitations in this research of which scholars need to be aware.

## **11.6 LIMITATIONS**

Although relevant contributions have been derived from the current research, there are still open questions. The thesis has several limitations in its approach and methodology that in some way might create chances to keep moving forward in future research. First, the research is limited as it uses self-reporting and because the sample used was a convenience sample, which means that it is difficult to generalize the findings beyond the present sample.

Second, although the PLS-SEM analysis confirmed adequate reliability, validity and robustness in the model under study, this study is the first of its kind to attempt to explore the relationship between organizational learning and patient safety culture in hospital pharmacy settings. Therefore, the views of different individuals pertaining to the topic may differ.

Third, the research is restricted to the analysis of the impact of only the selected variables with respect to the healthcare industry and does not provide unanimous interpretations that can be utilized by all sectors. Therefore, the applicability of this research to every other sector is questionable as different industries may observe different outcomes post-research.

Fourth, the area of research that has been used in this research is Kuwait, and the study is restricted to only this region. Therefore, the generalization of the results of this study to other regions may not be possible due to differences in the extent of development of the healthcare sector within different regions.

Fifth, the hospitals included in the study were not particularly amenable to providing their data, potentially because they were concerned about whether it would be safe to do so and whether the research would compromise their public reputation. Therefore, meetings and mediation were frequently required in order to receive permission from the hospital authorities, which was a time-consuming affair.

Finally, the survey is an Arabic version of PSOPSC and LOS-27 therefore, cannot be generalized to countries with other languages.

The next and last section of this thesis proposes agenda for future research.

## **11.7 AGENDA FOR FUTURE RESEARCH**

Several areas for future research have emerged from the findings of the current study. Based on this research, the relationship of PSOPSC with surveys of learning organizations other than LOS-27 can also be tested to highlight other possible dimensions of learning organizations that impact patient safety in a healthcare setting; this will help clarify this relationship further. A deeper understanding of patient safety culture requires qualitative methods as it is related to continuous culture (Mearns et al. 2013). Therefore, it is necessary for future research to use qualitative and quantitative methods for better understanding of patient safety culture. In addition, the mediating role of organizational learning in documenting mistakes and patient safety culture in hospital pharmacy settings will be for future research. It could be used to better understand the influence of

organizational learning on promoting pharmacy patient safety culture and documenting mistakes. Finally, the limitations of this research can be used to further develop studies that test the same variables in other countries. Consequently, the study might have to see several iterations in the future, based on differences in opinions and upcoming new developments.

## REFERENCES

- Ab Hamid, M., Sami, W. and Sidek, M.M. (2017) Discriminant Validity Assessment: Use of Fornell & Larcker criterion versus HTMT Criterion. *Journal of Physics: Conference Series*. Vol. 890. IOP Publishing.
- Abebe, E., Stone, J.A., Lester, C.A. and Chui, M.A. (2017) Quality of Handoffs in Community Pharmacies. *Journal of patient safety*. <https://doi.org/10.1097/PTS.0000000000000245>
- ACSQHC (2011) *Australian Commission on Safety and Quality in Health Care*. . National Safety and Quality Health Service Standards. Sydney ACSQHC. Accessed 28 May 2018.
- Aboneh, E.A., Stone, J.A., Lester, C.A. and Chui, M.A. (2017) Evaluation of Patient Safety Culture in Community Pharmacies. *Journal of patient safety*. <https://doi.org/10.1097/PTS.0000000000000245>.
- AHRQ (2012) *Hospital Survey on Patient Safety Culture*. USA: Agency for Healthcare Research and Quality. Accessed 25 May 2018.
- AHRQ (2014) *International Use of the Surveys on Patient Safety Culture*. Accessed 5 June 2018.
- Akhtar, I. (2016) *Research Design*. New Delhi:
- Akgün, E., Lynn, S. & Byrne, C. (2006) Antecedents and consequences of unlearning in new product development teams. *Journal of Product Innovation Management* 23, 73–88.
- Al Hamarneh, Y.N., Rosenthal, M., McElroy, J.C. and Tsuyuki, R.T. (2011) Pharmacists' perceptions of their professional role: insights into hospital pharmacy culture. *The Canadian journal of hospital pharmacy* 64(1), 31.
- Alahmadi, H. (2010) Assessment of patient safety culture in Saudi Arabian hospitals. *Qual Saf Health Care* 19(5), e17-e17.
- Al-Ahmadi, T.A. (2009) Measuring Patient Safety Culture in Riyadh's Hospitals: A Comparison between Public and Private Hospitals. *The Journal of the Egyptian Public Health Association* 84(5-6), 479-500.
- Al-Awa, B., De Wever, A., Almazrooa, A., Habib, H.H., al-Noury, K., el Deek, B. S., el Hati, T. and Devreux, I. (2011) The impact of accreditation on patient safety and quality of care indicators at King Abdulaziz University Hospital in Saudi Arabia. *Research Journal of Medical Sciences* 5(1), 43-51.
- Ali, H., Ibrahim, S.Z., Al Mudaf, B., Al Fadal, T., Jamal, D. and El-Jardali, F. (2018) Baseline assessment of patient safety culture in public hospitals in Kuwait. *BMC Health Services Research* 18(1), 158.
- Allen, D.S. (2016) *The Impact of Shortening a Long Survey on Response Rate and Response Quality*, PhD thesis, Brigham Young University, Brigham
- Alqattan, H., Cleland, J. and Morrison, Z. (2018) An evaluation of patient safety culture in a secondary care setting in Kuwait. *Journal of Taibah University Medical Sciences* 13(3), 272-280.
- Amponsah-Tawiah, K. and Adu, M.A. (2016) Work pressure and safety behaviors among health workers in Ghana: the moderating role of management commitment to safety. *Safety and health at work* 7(4), 340-346.
- Anand, N., Gardner, H.K. and Morris, T. (2007) Knowledge-based innovation: Emergence and embedding of new practice areas in management consulting firms. *Academy of Management Journal* 50(2), 406-428.

- Andermann, A., Ginsburg, L., Norton, P., Arora, N., Bates, D., Wu, A., Larizgoitia, I., Patient Safety Research Training and Education Expert Working Group of WHO Patient Safety (2011) Core competencies for patient safety research: a cornerstone for global capacity strengthening. *BMJ quality & safety* 20 (1), 96-101.
- Ang, S. and Joseph, D. (1996) Organizational learning and learning organizations: trigger events, processes, and structures. *Academy of Management Meetings*.
- Antonacopoulou, E.P. (2006) The relationship between individual and organizational learning: New evidence from managerial learning practices. *Management learning* 37(4), 455-473.
- Argote, L. (2012) *Organizational learning: Creating, retaining and transferring knowledge*, Springer Science & Business Media, New York., NY.
- Argote, L. (2013) Organizational memory. *Organizational Learning*. Springer. 85-113.
- Argote, L., Swart, J., van den Hooff, B. and van Baalen, P. (2011) Organizational learning research: Past, present and future. *Management Learning* 42(4), 439-446.
- Argyris, C. (1976) Single-loop and double-loop models in research on decision making. *Administrative science quarterly*, 363-375.
- Argyris, C. (1977a) Double loop learning in organizations. *Harvard Business Review* 55(5), 115-125.
- Argyris, C. (1977b) Organizational learning and management information systems. *Accounting, Organizations and Society* 2(2), 113-123.
- Argyris, C. (1994) Good communication that blocks learning. *Harvard Business Review* 72(4), 77-85.
- Argyris, C. (2001) *On Organizational Learning*. Blackwell, Oxford
- Argyris, C. (2004) Reflection and beyond in research on organizational learning. *Management Learning* 35 (4), 507-509.
- Argyris, C. and Schön, D. (1978) *Organizational Learning: A Theory of Action Perspective* Massachusetts. Reading, Addison-Wesley.
- Argyris, C. and Schön, D. (1996) *Organizational Learning II* Addison Wesley. Reading, MA.
- Argyris, J. and Mlejnek, H. (1991) Dynamics of Structures, Volume 5 (Texts on Computational Mechanics). North-Holland, Amsterdam.
- Ariga, K., Hill, J.P. and Ji, Q. (2007) Layer-by-layer assembly as a versatile bottom-up nanofabrication technique for exploratory research and realistic application. *Physical Chemistry Chemical Physics* 9(19), 2319-2340.
- Armenth-Brothers, F. (2015) *How to make small-group learning work*. Accessed 27 April 2018.
- Arnold, J., Silvester, J., Cooper, C.L., Robertson, I.T. and Patterson, F. M. (2005) *Work psychology: Understanding human behaviour in the workplace*. Pearson Education.
- Ashcroft, D. and Parker, D. (2009) Development of the Pharmacy Safety Climate Questionnaire: a principal components analysis. *Quality and Safety in Health Care* 18(1), 28-31.
- Ashcroft, D., Morecroft, C., Parker, D. and Noyce, P. (2005) Safety culture assessment in community pharmacy: development, face validity, and feasibility of the Manchester Patient Safety Assessment Framework. *Quality and Safety in Health Care* 14(6), 417-421.

- Avkiran, N.K. (2018) An in-depth discussion and illustration of partial least squares structural equation modeling in health care. *Health Care Management Science* 21(3), 401-408.
- Barker, D., Quennerstedt, M. and Annerstedt, C. (2015) Learning through group work in physical education: A symbolic interactionist approach. *Sport, Education and Society* 20(5), 604-623.
- Basten, D. and Haamann, T. (2018) Approaches for Organizational Learning: A Literature Review. *SAGE Open* 8(3), 2158244018794224.
- Basten, D. and Haamann, T. (2018) Approaches for Organizational Learning: A Literature Review, *SAGE Open*, 8(3), 1-20.
- Becker, J.-M., Klein, K. and Wetzels, M. (2012) Hierarchical latent variable models in PLS-SEM: guidelines for using reflective-formative type models. *Long Range Planning* 45(5-6), 359-394.
- Benzer, J.K., Meterko, M. and Singer, S.J. (2017) The patient safety climate in healthcare organizations (PSCHO) survey: Short-form development. *Journal of Evaluation in Clinical Practice* 23(4), 853-859.
- Berntsen, K.J. (2006) Implementation of patient centeredness to enhance patient safety. *Journal of Nursing Care Quality* 21(1), 15-19.
- Berson, Y., Da'as, R.A. and Waldman, D.A. (2015) How do leaders and their teams bring about organizational learning and outcomes? *Personnel Psychology* 68(1), 79-108.
- Berta, W.B. and Baker, R. (2004) Factors that impact the transfer and retention of best practices for reducing error in hospitals. *Health Care Management Review* 29(2), 90-97.
- Blaikie, N. (2009) *Designing social research*. Polity.
- Bland, J.M. and Altman, D.G. (1997), Statistics notes: Cronbach's alpha, *British Medical Journal*, 314(7080), 572.
- Blackler, Frank (2004) Knowledge, knowledge work and organizations: an overview and interpretation. *How Organizations Learn: Managing the Search for Knowledge*. K. Starkey, S. Tempest and A. McKinlay. London, Thompson: 339-362.
- Blaxter, L. (2010) *How to research*. McGraw-Hill Education (UK).
- Blueprint (2009) *Blueprint for pharmacy implementation plan: achieving the vision*. Ottawa, Canada: Canadian Pharmacists Association.
- Bond, C., Raehl, C.L. and Franke, T. (2002) Clinical pharmacy services, hospital pharmacy staffing, and medication errors in United States hospitals. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy* 22(2), 134-147.
- Bower, P., Campbell, S., Bojke, C. and Sibbald, B. (2003) Team structure, team climate and the quality of care in primary care: an observational study. *BMJ Quality & Safety* 12(4), 273-279.
- Boyle, D.K. and Kochinda, C. (2004) Enhancing collaborative communication of nurse and physician leadership in two intensive care units. *Journal of nursing administration* 34(2), 60-70.
- Brandi, U. and Elkjaer, B. (2011) Organizational learning viewed from a social learning perspective. In Easterby-Smith, M. and Lyles, M.A. (Eds): *Handbook of organizational learning and knowledge management* 2, John Wiley & Sons, 23-41.



- Brix, J. (2019) Innovation capacity building: an approach to maintaining balance between exploration and exploitation in organizational learning. *The Learning Organization* 26(1), 12-26.
- Bryman, A. and Bell, E. (2011) *Business Research Methods 3e*. Oxford University Press.
- Burnett, S., Benn, J., Pinto, A., Parand, A., Iskander, S. and Vincent, C. (2010) Organisational readiness: exploring the preconditions for success in organisation-wide patient safety improvement programmes. *BMJ Quality & Safety* 19(4), 313-317.
- Byers, J.F. and White, S.V. (2004) *Patient safety: principles and practice*. Springer Publishing Company.
- Cangelosi, V.E. and Dill, W.R. (1965) Organizational learning: Observations toward a theory. *Administrative Science Quarterly*, 175-203.
- Carayon, P. (2006) *Handbook of human factors and ergonomics in health care and patient safety*. CRC Press.
- Carroll, J. and Edmondson, A.C. (2002) Leading organisational learning in health care. *BMJ Quality & Safety* 11(1), 51-56.
- Casey, A. (2005) Enhancing individual and organizational learning: a sociological model. *Management learning* 36(2), 131-147.
- Chassin, M.R. and Loeb, J.M. (2013) High-reliability health care: getting there from here. *The Milbank Quarterly* 91(3), 459-490.
- Chettri, B. (2016) *Individual Learning* Accessed 19 April 2018.
- Chia, R. (2017) A process-philosophical understanding of organizational learning as “wayfinding”: Process, practices and sensitivity to environmental affordances. *The Learning Organization* 24 (2), 107-118.
- Chin, W.W. (2010) How to write up and report PLS analyses. *Handbook of partial least squares*. Springer. 655-690.
- Chisholm, C., Harris, M., Northwood, D. and Johrendt, J. (2009) The characterisation of work-based learning by consideration of the theories of experiential learning. *European Journal of Education* 44(3), 319-337.
- Chiva, R., Alegre, J. and Lapiedra, R. (2007) Measuring organisational learning capability among the workforce. *International Journal of Manpower* 28(3/4), 224-242.
- Choo, A.S., Linderman, K.W. and Schroeder, R.G. (2007) Method and psychological effects on learning behaviors and knowledge creation in quality improvement projects. *Management Science* 53(3), 437-450.
- Chuang, Y.-T. and Baum, J.A. (2003) It's all in the name: Failure-induced learning by multiunit chains. *Administrative Science Quarterly* 48(1), 33-59.
- Clark, G. (2002) Organisational culture and safety: an interdependent relationship. *Australian Health Review* 25(6), 181-189.
- Clarke, C. (2009) Paths between positivism and interpretivism: An appraisal of Hay's via media. *Politics* 29(1), 28-36.
- Classen, D.C. and Metzger, J. (2003) Improving medication safety: the measurement conundrum and where to start. *International Journal for Quality in Health Care* 15(suppl\_1), i41-i47.
- Colla, J.B., Bracken, A.C., Kinney, L.M. and Weeks, W.B. (2005) Measuring patient safety climate: a review of surveys. *BMJ Quality & Safety* 14(5), 364-366.

- Collien, I. (2018) Critical–reflexive–political: Dismantling the reproduction of dominance in organizational learning processes. *Management Learning* 49(2), 131-149.
- Cook, D.A., Hatala, R., Brydges, R., Zendejas, B., Szostek, J.H., Wang, A.T., Erwin, P.J. and Hamstra, S.J. (2011) Technology-enhanced simulation for health professions education: a systematic review and meta-analysis. *Jama* 306(9), 978-988.
- Cook, S.D. and Yanow, D. (1993) Culture and organizational learning. *Journal of management inquiry* 2(4), 373-390.
- Cooper, J.B., Blum, R.H., Carroll, J.S., Dershwitz, M., Feinstein, D.M., Gaba, D.M., Morey, J.C. and Singla, A.K. (2008) Differences in safety climate among hospital anesthesia departments and the effect of a realistic simulation-based training program. *Anesthesia & Analgesia* 106(2), 574-584.
- Cooper, M.D. (2000) Towards a model of safety culture. *Safety Science* 36(2), 111-136.
- Corrigan, J.M. and Adams, K. (2003) *Priority areas for national action: transforming health care quality*. National Academies Press.
- Creswell, J.W. and Clark, V.L.P. (2007) Designing and conducting mixed methods research.
- Crossan, M.M., Lane, H.W. and White, R.E. (1999) An organizational learning framework: From intuition to institution. *Academy of management review* 24(3), 522-537.
- Crotty, M. (1998) *The foundations of social research: Meaning and perspective in the research process*. Sage.
- Cyert, R.M. and March, J.G.. (1963) *A behavioral theory of the firm* 2. Englewood Cliffs, NJ: Prentice-Hall.
- Davenport, D.L., Henderson, W.G., Mosca, C.L., Khuri, S.F. and Mentzer Jr, R.M. (2007) Risk-adjusted morbidity in teaching hospitals correlates with reported levels of communication and collaboration on surgical teams but not with scale measures of teamwork climate, safety climate, or working conditions. *Journal of the American College of Surgeons* 205(6), 778-784.
- Dean, B., Schachter, M., Vincent, C. and Barber, N. (2002) Causes of prescribing errors in hospital inpatients: a prospective study. *The Lancet* 359(9315), 1373-1378.
- Dean, P., LaVallee, R., McLaughlin, C. and Kaluzny, A. (1999) Teams at the core of continuous learning. *Continuous Quality Improvement in Health Care: Theory, Implementation, and Applications*. Gaithersburg, MD: Aspen Publishers, Incorporated, 147-167.
- Dedobbeleer, N. and Béland, F. (1991) A safety climate measure for construction sites. *Journal of safety research* 22(2), 97-103.
- Dekker, S., Cilliers, P. and Hofmeyr, J.-H. (2011) The complexity of failure: Implications of complexity theory for safety investigations. *Safety Science* 49(6), 939-945.
- Deming, W. (1993) *The new economics for industry, education, government*. Cambridge, MA: Massachusetts Institute of Technology. Center for Advanced Engineering Study.
- Desmedt, M., Bergs, J., Willaert, B., Vlayen, A., Hellings, J., Schrooten, W., Claes, N. and Vandijck, D. (2017) The SCOPE-PC instrument for assessing patient safety culture in primary care: a psychometric evaluation. *Acta Clinica Belgica*, 1-9.
- Dingley, C., Daugherty, K., Derieg, M.K. and Persing, R. (2008) Improving patient safety through provider communication strategy enhancements. In: Henriksen K, Battles JB, Keyes MA, et al. eds. *Advances in patient safety: new directions and alternative*

- approaches (3): Performance and Tools). Rockville, MD: Agency for Healthcare Research and Quality (US).
- Dixon, N. (1999) *The Organizational Learning Cycle, How we can learn collectively*, Hampshire, Gower Publ. Ltd, UK.
- Dodgson, M. (1993) Organizational learning: a review of some literatures, *Organization studies*, 14(3), 375-394.
- Donaldson, M.S., Corrigan, J.M. and Kohn, L.T. (2000) *To err is human: building a safer health system*. Vol. 6. National Academies Press.
- Dooley, M.J., Allen, K.M., Doecke, C.J., Galbraith, K.J., Taylor, G.R., Bright, J. and Carey, D.L. (2004) A prospective multicentre study of pharmacist initiated changes to drug therapy and patient management in acute care government funded hospitals. *British Journal of Clinical Pharmacology* 57(4), 513-521.
- Dowd, S.B. (2000) Organizational learning and the learning organization in health care. *Hospital Materiel Management Quarterly* 21(3), 1-3.
- Dudovskiy, J. (2016) *The Ultimate Guide to Writing a Dissertation in Business Studies: A Step-by-Step Assistance*. Pittsburgh, USA.
- Dutton, J.M., Thomas, A. and Butler, J.E. (1984) The history of progress functions as a managerial technology. *Business History Review* 58(2), 204-233.
- Easterby-Smith, M. (1997) Disciplines of organizational learning: contributions and critiques. *Human relations* 50(9), 1085-1113.
- Easterby-Smith, M. and Lyles, M. (2003) Re-reading Organizational Learning: Selective memory, forgetting, and adaptation. *Academy of Management Perspectives* 17(2), 51-55.
- Easterby-Smith, M. and Lyles, M.A. (2011) *Handbook of organizational learning and knowledge management*. John Wiley & Sons.
- Easterby-Smith, M., Crossan, M. and Nicolini, D. (2000) Organizational learning: debates past, present and future. *Journal of management studies* 37(6), 783-796.
- Edmondson, A.C., Bohmer, R.M. and Pisano, G.P. (2001) Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly* 46(4), 685-716.
- Edwards, M.T. (2017) An organizational learning framework for patient safety. *American Journal of Medical Quality* 32(2), 148-155.
- Eisenlohr, A., Render, M.L. and Patterson, E.S. (2002) Creating patient safety with organizational learning: A case-based learning intervention at a public and private hospital. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. Vol. 46. SAGE Publications Sage CA: Los Angeles, CA.
- El-Jardali, F., Sheikh, F., Garcia, N.A., Jamal, D. and Abdo, A. (2014) Patient safety culture in a large teaching hospital in Riyadh: baseline assessment, comparative analysis and opportunities for improvement. *BMC health services research* 14(1), 122.
- Elkjaer, B. (2004) Organizational learning: the 'third way'. *Management learning* 35(4), 419-434.
- Elmontsri, M., Almashrafi, A., Banarsee, R. and Majeed, A. (2017) Status of patient safety culture in Arab countries: a systematic review. *BMJ open* 7(2), e013487.
- Field, A. (2009) *Discovering statistics using SPSS*, 3<sup>rd</sup> edn, London: Sage publications.

- Finstad, K. (2010) Response interpolation and scale sensitivity: Evidence against 5-point scales. *Journal of Usability Studies* 5(3), 104-110.
- Fiol, C.M. and Lyles, M.A. (1985) Organizational learning. *Academy of management review* 10(4), 803-813.
- Fiol, C. M. and O'Connor, E. J. (2017) Unlearning established organizational routines – Part II. *The Learning Organization* 24 (2), 82-92.
- Firth-Cozens, J. (2001) Cultures for improving patient safety through learning: the role of teamwork. *BMJ Quality & Safety* 10(suppl 2), ii26-ii31.
- Flin, R. and Patey, R. (2009) Improving patient safety through training in non-technical skills. *BMJ: British Medical Journal (Online)* 339.
- Flin, R., Burns, C., Mearns, K., Yule, S. and Robertson, E. (2006) Measuring safety climate in health care. *BMJ Quality & Safety* 15(2), 109-115.
- Flood, R. and Romm, N. (1998) Diversity Management: Triple Loop Learning. *Journal of the Operational Research Society* 49(3), 293-295.
- Foundation, T.H. (2011) *Does improving safety culture affect patient outcomes?*
- Gaba, D.M. (2000) Structural and organizational issues in patient safety: a comparison of health care to other high-hazard industries, *California Management Review*, 43(1), 83-102.
- Gaba, D.M., Singer, S.J., Sinaiko, A.D., Bowen, J.D. and Ciavarelli, A.P. (2003) Differences in safety climate between hospital personnel and naval aviators. *Human Factors* 45(2), 173-185.
- Gable, G.G. (1994) Integrating case study and survey research methods: an example in information systems. *European Journal of Information Systems* 3(2), 112-126.
- Gardner, H. (1999). *The disciplined mind: What all students should understand*. New York. Simon & Schuster
- Garvin, D.A. (1993) Building a learning organization. *Harvard Business Review* 71(4), 78-91, July-August.
- Garvin, D.A., Edmondson, A.C. and Gino, F. (2008) Is yours a learning organization? *Harvard Business Review* 86(3), 109.
- Gaureanu, A., Draghici, A., Dufour, C. and Weinschrott, H. (2018) The Organizational Safety Culture Assessment. *International Conference on Human Systems Engineering and Design: Future Trends and Applications*. Springer.
- Ghuri, P.N. and Grønhaug, K. (2005) *Research methods in business studies: A practical guide*. Pearson Education.
- Ghobashi, M.M., El-ragehy, H.A.G., Ibrahim, H.M. and Al-Doseri, F.A. (2014) Assessment of patient safety culture in primary health care settings in Kuwait. *Epidemiology, Biostatistics and Public Health* 11(3).
- Glennon, D. (1982) Measuring organisational safety climate. *Australian Safety News* 23, 23-28.
- Goh, S. and Richards, G. (1997) Benchmarking the learning capability of organizations. *European Management Journal* 15(5), 575-583.
- Goh, S.C. (1998) Toward a learning organization: The strategic building blocks. *SAM Advanced Management Journal*, 63, 15-22.

- Goh, S.C., Chan, C. and Kuziemy, C. (2013) Teamwork, organizational learning, patient safety and job outcomes. *International journal of health care quality assurance* 26(5), 420-432.
- Grant, R.M. (1996) Toward a knowledge-based theory of the firm. *Strategic management journal* 17(S2), 109-122.
- Green, S. and Higgins, J. (2005) *Cochrane handbook for systematic reviews of interventions*. In The Cochrane Library, Issue 3. John Wiley: Chichester.
- Greene, S.M., Reid, R.J. and Larson, E.B. (2012) Implementing the learning health system: from concept to action. *Annals of internal medicine* 157(3), 207-210.
- Greenhill, N., Anderson, C., Avery, A. and Pilnick, A. (2011) Analysis of pharmacist-patient communication using the Calgary-Cambridge guide. *Patient education and counseling* 83(3), 423-431.
- Grol, R., Wensing, M., Eccles, M. and Davis, D. (2013) *Improving patient care: the implementation of change in health care*. John Wiley & Sons.
- Grumbach, K. and Bodenheimer, T. (2004) Can health care teams improve primary care practice? *Jama* 291(10), 1246-1251.
- Guldenmund, F. (2014) Organizational Safety Culture Principles In Waterson, P. (editor) *Patient Safety Culture Theory, Methods and Application*. England: Ashgate Publishing Limited. 15-42.
- Guldenmund, F.W. (2000) The nature of safety culture: a review of theory and research. *Safety science* 34(1-3), 215-257.
- Gutberg, J. and Berta, W. (2017) Understanding middle managers' influence in implementing patient safety culture. *BMC health services research* 17(1), 582.
- Hair Jr, J.F., Hult, G.T.M., Ringle, C. and Sarstedt, M. (2016) *A primer on partial least squares structural equation modeling (PLS-SEM)*. 2<sup>nd</sup> edn, Sage Publications.
- Halligan, M. and Zecevic, A. (2011) Safety culture in healthcare: a review of concepts, dimensions, measures and progress. *BMJ Quality & Safety*, bmjqs. 2010.040964.
- Hammersley, Martyn and Atkinson, Paul (2005) *Ethnography: Principles in Practice*. London, Routledge
- Hartmann, C.W., Meterko, M., Rosen, A.K., Zhao, S., Shokeen, P., Singer, S. and Gaba, D.M. (2009) Relationship of hospital organizational culture to patient safety climate in the Veterans Health Administration. *Medical Care Research and Review* 66(3), 320-338.
- Hedberg, B. (1981) How organizations learn and unlearn. in P. C. Nystrom, and W. H. Starbuck, (Eds.), *Handbook of Organizational Design* (1), 3-27.
- Hellings, J., Schrooten, W., Klazinga, N. and Vleugels, A. (2007) Challenging patient safety culture: survey results. *International journal of health care quality assurance* 20(7), 620-632.
- Hemman, E.A. (2002) Creating healthcare cultures of patient safety. *Journal of nursing administration* 32(7/8), 419-427.
- Henderson, K.C., Hindman, J., Johnson, S.C., Valuck, R.J. and Kiser, J.J. (2011) Assessing the effectiveness of pharmacy-based adherence interventions on antiretroviral adherence in persons with HIV. *AIDS patient care and STDs* 25(4), 221-228.
- Henriksen, K., Battles, J., Keyes, M. and Grady, M. (2008) *Advances in patient safety: new directions and alternative approaches*. AHRQ Publication (1).

- Henseler, J., Hubona, G. and Ray, P.A. (2016) Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems* 116(1), 2-20.
- Henseler, J., Ringle, C.M. and Sarstedt, M. (2015) A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science* 43(1), 115-135.
- Hernandez, M. and Watkins, K. (2003) Translation, validation and adaptation of the Spanish version of the modified dimensions of the learning organization questionnaire, *Human Resource Development International*, 6(2), 187-196.
- Hewitt-Taylor, J. (2001) Use of constant comparative analysis in qualitative research. *Nursing Standard (through 2013)* 15(42), 39.
- Hickson, G.B., Pichert, J.W., Webb, L.E. and Gabbe, S.G. (2007) A complementary approach to promoting professionalism: identifying, measuring, and addressing unprofessional behaviors. *Academic Medicine* 82(11), 1040-1048.
- Hodgkinson, M. (2000) Managerial perceptions of barriers to becoming a "learning organization". *The Learning Organization* 7(3), 156-167.
- Hofstede, G. (2001) *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage publications.
- Holden, L., Watts, D. and Walker, P. (2010) Communication and collaboration: it's about the pharmacists, as well as the physicians and nurses. *BMJ Quality & Safety* 19(3), 169-172.
- Huang, Y.-Y. and Li, S.-J. (2010) Understanding quality perception gaps among executives, frontline employees, and patients: the outpatient services in Taiwan hospitals. *Quality Management in Healthcare* 19(2), 173-184.
- Huber, G.P. (1991) Organizational Learning: The Contributing Processes and the Literatures. *Organization Science* 2(1), 88-115.
- Hughes, Stuart (1958) *Consciousness and society*. Brighton, Harvester Press.
- Hunt, S.D., Sparkman Jr, R.D. and Wilcox, J.B. (1982) The pretest in survey research: Issues and preliminary findings. *Journal of Marketing Research*, 19, 269-273.
- Huysman, M. (2002) Organizational learning and communities of practice: a social constructivist perspective. *Proceedings of the Third European Conference on Organizational Knowledge, Learning, and Capabilities*.
- Ikkersheim, D.E. and Berg, M. (2011) How reliable is your hospital? A qualitative framework for analysing reliability levels. *BMJ quality & safety* 20(9), 785-790.
- INSAG (1988) *Basic Safety Principles for Nuclear Power Plants* Vienna: International Atomic Energy Agency.
- IOM (2006) *Crossing the quality chasm: a new health system for the 21st century*. Washington, DC: Institute of Medicine
- Isaacs, W.N. (1993) Taking flight: Dialogue, collective thinking, and organizational learning. *Organizational dynamics* 22(2), 24-39.
- Itoh, K., Andersen, H. and Mikkelsen, K. (2014) Safety Culture Dimensions, Patient Safety Outcomes and Their Correlations. In Waterson, P. (Ed.) *Patient Safety Culture Theory, Methods and Application*. England: Ashgate Publishing Limited. 76-98.
- Izquierdo, Y.B., Agudo, P.M., Ramírez, Á.A., Labriola, C.I., González, C.A. and Verdugo, R.M. (2013) Influence of co-medication on the risk of clinically relevant drug

- interactions in patients with HIV. *European Journal of Hospital Pharmacy: Science and Practice* 20(2), 88-92.
- Jabareen, Y. (2009) Building a conceptual framework: philosophy, definitions, and procedure. *International Journal of qualitative methods* 8(4), 49-62.
- Jerez-Gomez, P., Céspedes-Lorente, J. and Valle-Cabrera, R. (2005) Organizational learning capability: a proposal of measurement, *Journal of business research*, 58(6), 715-725.
- Jerez-Gomez, P., Céspedes-Lorente, J. and Valle-Cabrera, R. (2005) Organizational learning capability: a proposal of measurement. *Journal of business research* 58(6), 715-725.
- Jia, P.L., Zhang, L.H., Zhang, M.M., Zhang, L.L., Zhang, C., Qin, S.F., Li, X.L. and Liu, K.X. (2014) Safety culture in a pharmacy setting using a pharmacy survey on patient safety culture: a cross-sectional study in China. *BMJ open* 4(6), 1-12.
- Johnson, P. and Duberley, J. (2000) *Understanding management research: An introduction to epistemology*. London: Sage.
- Johnson, R.B. and Onwuegbuzie, A.J. (2004) Mixed methods research: A research paradigm whose time has come. *Educational researcher* 33(7), 14-26.
- Jones, M. (1995) Organisational learning: collective mind or cognitivist metaphor? *Accounting, Management and Information Technologies*, 5(1), 61-77.
- Jupp, V. (2006) *The Sage dictionary of social research methods*. Sage.
- Kaboli, P.J., Hoth, A.B., McClimon, B.J. and Schnipper, J.L. (2006) Clinical pharmacists and inpatient medical care: a systematic review. *Archives of internal medicine* 166(9), 955-964.
- Kaplan, H.C., Brady, P.W., Dritz, M.C., Hooper, D.K., Linam, W.M., Froehle, C.M. and Margolis, P. (2010) The influence of context on quality improvement success in health care: a systematic review of the literature. *The Milbank Quarterly* 88(4), 500-559.
- Katz, D. and Kahn, R.L. (1978) *The social psychology of organizations*. Vol. 2. Wiley New York.
- Katz-Navon, T., Naveh, E. and Stern, Z. (2005) Safety climate in health care organizations: A multidimensional approach. *Academy of Management Journal* 48(6), 1075-1089.
- Kelly, W.N. (2001) Potential risks and prevention, part 4: reports of significant adverse drug events. *American journal of health-system pharmacy* 58(15), 1406-1412.
- Kenny (2014) *Measuring model fit*. Accessed 20 June 2018.
- Kerr, A., Strawbridge, J., Kelleher, C., Mertens, F., Pype, P., Deveugele, M. and Pawlikowska, T. (2017) How can pharmacists develop patient-pharmacist communication skills? A realist review protocol. *Systematic Reviews* 6(1), 14.
- Khatri, N., Brown, G.D. and Hicks, L.L. (2009) From a blame culture to a just culture in health care. *Health care management review* 34(4), 312-322.
- Kibicho, J. and Owczarzak, J. (2012) A patient-centered pharmacy services model of HIV patient care in community pharmacy settings: a theoretical and empirical framework. *AIDS patient care and STDs* 26(1), 20-28.
- Kim Jean Lee, S. and Yu, K. (2004) Corporate culture and organizational performance. *Journal of managerial psychology* 19(4), 340-359.

- Kim, D.H. (1993) The link between individual and organizational learning. *Sloan Management Review* 33(1), 37-50.
- Kim, L. (1998) Crisis construction and organizational learning: Capability building in catching-up at Hyundai Motor. *Organization science* 9(4), 506-521.
- Kim, S. (2003) Research paradigms in organizational learning and performance: Competing modes of inquiry. *Information Technology, Learning, and Performance Journal* 21(1), 9.
- Kingston-Riechers, J., Ospina, M., Jonsson, E., Childs, P., McLeod, L. and Maxted, J. (2010) Patient safety in primary care. *Canadian Patient Safety Institute and BC Patient Safety and Quality Council: Edmonton, AB* Available at <http://www.patientsafetyinstitute>. Accessed 19 December 2011.
- Kleysen, R.F. and Dyck, B. (2001) Cumulating knowledge: An elaboration and extension of Crossan, Lane and White's framework for organizational learning. *Best Paper Proceedings 4<sup>th</sup> International Conference for Organizational Learning and Knowledge Management*.
- Kline, R.B. (2015) *Principles and practice of structural equation modeling*. 4<sup>th</sup> edn, Guilford Publications, London.
- Kothari, C.R. (2004) *Research methodology: Methods and techniques*. New Age International.
- Kowitlawakul, Y., Leong, B.S., Lua, A., Aroos, R., Wong, J.J., Koh, N., Goh, N., See, K.C., Phua, J. and Mukhopadhyay, A. (2015) Observation of handover process in an intensive care unit (ICU): barriers and quality improvement strategy. *International journal for quality in health care* 27(2), 99-104.
- Kreitner, R. (2007) *Organizational Behaviour* 7<sup>th</sup> edition. New York: McGrawHill/Irwin.
- Krumberger, J. (2001) Building a culture of safety. *RN* 64(1), 32ac2.
- Kuhn, A.-M. and Youngberg, B.J. (2002) The need for risk management to evolve to assure a culture of safety. *BMJ Quality & Safety* 11(2), 158-162.
- Lalor, D.J., Chen, T.F., Walpola, R., George, R.A., Ashcroft, D.M. and Fois, R.A. (2015) An exploration of Australian hospital pharmacists' attitudes to patient safety. *International Journal of Pharmacy Practice* 23(1), 67-76.
- Lalor, D.J., Chen, T.F., Walpola, R., George, R.A., Ashcroft, D.M. and Fois, R.A. (2015) An exploration of Australian hospital pharmacists' attitudes to patient safety. *International Journal of Pharmacy Practice* 23(1), 67-76.
- Law, K.M. and Chuah, K.B. (2015) Organizational learning as a continuous process, DELO. *PAL driven organizational learning: Theory and practices*. Springer. 7-29.
- Leape, L., Berwick, D., Clancy, C., Conway, J., Gluck, P., Guest, J., Lawrence, D., Morath, J., O'leary, D. and O'Neill, P. (2009) Transforming healthcare: a safety imperative. *BMJ Quality & Safety* 18(6), 424-428.
- Leape, L.L., Berwick, D.M. and Bates, D.W. (2002) What practices will most improve safety?: evidence-based medicine meets patient safety. *Jama* 288(4), 501-507.
- Lee, T. and Harrison, K. (2000) Assessing safety culture in nuclear power stations. *Safety science* 34(1-3), 61-97.
- Leifer, L.J. and Steinert, M. (2011) Dancing with ambiguity: Causality behavior, design thinking, and triple-loop-learning. *Information Knowledge Systems Management* 10(1-4), 151-173.



- Lemieux-Charles, L. and McGuire, W.L. (2006) What do we know about health care team effectiveness? A review of the literature. *Medical Care Research and Review* 63(3), 263-300.
- Leonard, M., Graham, S. and Bonacum, D. (2004) The human factor: the critical importance of effective teamwork and communication in providing safe care. *BMJ Quality & Safety* 13(suppl 1), i85-i90.
- Leotsakos, A., Zheng, H., Croteau, R., Loeb, J.M., Sherman, H., Hoffman, C., Morganstein, L., O'Leary, D., Bruneau, C. and Lee, P. (2014) Standardization in patient safety: the WHO High 5s project. *International journal for quality in health care* 26(2), 109-116.
- Levinson, W. and Gallagher, T.H. (2007) Disclosing medical errors to patients: a status report in 2007. *Canadian Medical Association Journal* 177(3), 265-267.
- Levinthal, D.A. and March, J.G. (1993) The myopia of learning. *Strategic Management Journal* 14(S2), 95-112.
- Lewin, K., Lippitt, R. and White, R.K. (1939) Patterns of aggressive behavior in experimentally created "social climates". *The Journal of social psychology* 10(2), 269-299.
- Lewis, J.R. (1993) Multipoint scales: Mean and median differences and observed significance levels, *International Journal of Human-Computer Interaction*, 5(4), 383-392.
- Lewis, S. (2015) Qualitative inquiry and research design: Choosing among five approaches. *Health promotion practice* 16(4), 473-475.
- Lingard, L., Espin, S., Whyte, S., Regehr, G., Baker, G., Reznick, R., Bohnen, J., Orser, B., Doran, D. and Grober, E. (2004) Communication failures in the operating room: an observational classification of recurrent types and effects. *BMJ Quality & Safety* 13(5), 330-334.
- Listyowardojo, T.A., Nap, R.E. and Johnson, A. (2011) Variations in hospital worker perceptions of safety culture. *International journal for quality in health care* 24(1), 9-15.
- Livorsi, D., Knobloch, M., Blue, L., Swafford, K., Maze, L., Riggins, K., Hayward, T. and Safdar, N. (2016) A rapid assessment of barriers and facilitators to safety culture in an intensive care unit. *International nursing review* 63(3), 372-376.
- Longmore, B. (2011) *Work-based learning: bridging knowledge and action in the workplace*. Taylor & Francis.
- Luxford, K., Safran, D.G. and Delbanco, T. (2011) Promoting patient-centered care: a qualitative study of facilitators and barriers in healthcare organizations with a reputation for improving the patient experience, *International Journal for Quality in Health Care*, 23(5), 510-515.
- Macdonnell, M. and Darzi, A. (2013) A key to slower health spending growth worldwide will be unlocking innovation to reduce the labor-intensity of care. *Health Affairs* 32(4), 653-660.
- Makowsky, M.J., Schindel, T.J., Rosenthal, M., Campbell, K., Tsuyuki, R.T. and Madill, H.M. (2009) Collaboration between pharmacists, physicians and nurse practitioners: a qualitative investigation of working relationships in the inpatient medical setting. *Journal of interprofessional care* 23(2), 169-184.
- Malhi, R.S. (2013) Creating and sustaining: a quality culture. *Journal of Defense Management* 3, 2167-0374.

- Manley, K., Titchen, A. and Hardy, S. (2009) Work-based learning in the context of contemporary health care education and practice: A concept analysis. *Practice Development in Health Care* 8(2), 87-127.
- Manser, T. (2009) Teamwork and patient safety in dynamic domains of healthcare: a review of the literature. *Acta Anaesthesiologica Scandinavica* 53(2), 143-151.
- Marshall, S., Harrison, J. and Flanagan, B. (2009) The teaching of a structured tool improves the clarity and content of interprofessional clinical communication. *BMJ Quality & Safety* 18(2), 137-140.
- Martins, N. and Martins, E. (2003) Organisational culture. *Organisational Behaviour: Global and Southern African Perspectives*. Cape Town: Pearson Education South Africa, 379-400.
- Matsumoto, D. and Juang, L. (2016) *Culture and psychology*. Nelson Education.
- Matsunaga, M. (2010) How to factor-analyze your data right: do's, don'ts, and how-to's. *International journal of psychological research* 3(1), 97-110.
- Mazutis, D. and Slawinski, N. (2008) Leading Organizational Learning Through Authentic Dialogue. *Management Learning* 39(4), 437-456.
- McNutt, R.A., Abrams, R., Aron, D.C. and Committee, P.S. (2002) Patient safety efforts should focus on medical errors. *Jama* 287 (15), 1997-2001.
- Melnyk, B.M. and Fineout-Overholt, E. (2011) *Evidence-based practice in nursing & healthcare: A guide to best practice*. Lippincott Williams & Wilkins.
- Menezes, E.A.C., Guimarães, T.D.A. and Bido, D.D.S. (2011) Dimensions of learning in organizations: validation of the Dimensions of the Learning Organization Questionnaire (DLOQ) in the Brazilian context, *RAM. Revista de Administração Mackenzie*, 12(2), 4-29.
- Mesquita, A.R., Lyra Jr, D.P., Brito, G.C., Balisa-Rocha, B.J., Aguiar, P.M. and de Almeida Neto, A.C. (2010) Developing communication skills in pharmacy: a systematic review of the use of simulated patient methods. *Patient Education and Counseling* 78(2), 143-148.
- Metz, P. (2017) Distances, multinational organisational learning, and firm performance: a new perspective. *International Journal of Business Environment* 9(2), 93-113.
- Meyer, W. (2010) Independent learning: a literature review and a new project. *British Educational Research Association Annual Conference, University of Warwick*.
- Miles, M.B., Huberman, A.M., Huberman, M.A. and Huberman, M. (1994) *Qualitative data analysis: An expanded sourcebook*. Sage.
- Millum, J. and Sina, B. (2014) Introduction: international research ethics education. *Journal of Empirical Research on Human Research Ethics* 9(2), 1-2.
- Miner AS and Mezias S (1996) Ugly duckling no more: Past and futures of organizational learning research. *Organization Science* 7(1), 88-100.
- Mitchell, P.H. (2008) Defining patient safety and quality care. In: *Patient Safety and Quality an Evidence-based Handbook for Nurses*, edited by Hughes RG, Rockville, MD, Agency for Healthcare Research and Quality, 2008, pp 1-5
- Mohr, J.J. (2005) Creating a safe learning organization. *Frontiers of Health Services Management* 22(1), 41.
- Mohr, J.J. (2005) Creating a safe learning organization. *Frontiers of Health Services Management* 22(1), 41.

- Needle, D. (2010) *Business in context: An introduction to business and its environment*. Cengage Learning EMEA.
- Nembhard, I.M. and Tucker, A.L. (2011) Deliberate learning to improve performance in dynamic service settings: Evidence from hospital intensive care units, *Organization Science*, 22(4), 907-922.
- Nevis, E.C., DiBella, A.J. and Gould, J.M. (2000) Understanding organizations as learning systems. *Sloan Management Review*, 36(2), 73-85.
- Nguyen, E.E., Connolly, P.M. and Wong, V. (2010) Medication safety initiative in reducing medication errors. *Journal of nursing care quality* 25(3), 224-230.
- Nie, Y., Mao, X., Cui, H., He, S., Li, J. and Zhang, M. (2013) Hospital survey on patient safety culture in China, *BMC Health Services Research*, 13(1), 1-11.
- Nieva, V. and Sorra, J. (2003) Safety culture assessment: a tool for improving patient safety in healthcare organizations. *BMJ Quality & Safety* 12(suppl 2), ii17-ii23.
- Nitzl, C. and Chin, W.W. (2017) The case of partial least squares (PLS) path modeling in managerial accounting research. *Journal of Management Control*, 1-20.
- Nitzl, C. (2016) The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: Directions for future theory development. *Journal of Accounting Literature*, 37, 19-35.
- Nonaka, I., Toyama, R. and Konno, N. (2000) SECI, Ba and leadership: a unified model of dynamic knowledge creation. *Long range planning* 33(1), 5-34.
- Nordén-Hägg, A., Sexton, J.B., Källemark-Sporrong, S., Ring, L. and Kettis-Lindblad, Å. (2010) Assessing safety culture in pharmacies: the psychometric validation of the Safety Attitudes Questionnaire (SAQ) in a national sample of community pharmacies in Sweden. *BMC clinical pharmacology* 10(1), 8.
- Nuckols, T.K., Bell, D.S., Liu, H., Paddock, S.M. and Hilborne, L.H. (2007) Rates and types of events reported to established incident reporting systems in two US hospitals. *BMJ Quality & Safety* 16(3), 164-168.
- Oandasan, I.F., Conn, L.G., Lingard, L., Karim, A., Jakubovicz, D., Whitehead, C., Miller, K.-L., Kennie, N. and Reeves, S. (2009) The impact of space and time on interprofessional teamwork in Canadian primary health care settings: implications for health care reform. *Primary Health Care Research & Development* 10(2), 151-162.
- Oates, J., Weston, W.W. and Jordan, J. (2000) The impact of patient-centered care on outcomes. *Fam Pract* 49(9), 796-804.
- Ormston, R., Spencer, L., Barnard, M. and Snape, D. (2014) The foundations of qualitative research. *Qualitative research practice: A guide for social science students and researchers* 2, 52-55.
- Ornelas, M., Pais, D. and Sousa, P. (2016) Patient safety culture in Portuguese primary healthcare. *Quality in Primary Care* 24(5), 214-218.
- Ostroff, C., Kinicki, A.J. and Tamkins, M.M. (2003) Organizational culture and climate. *Handbook of psychology*, 565-593.
- Ostrom, L., Wilhelmsen, C. and Kaplan, B. (1993) Assessing safety culture. *Nuclear safety* 34(2), 163-172.
- Ouchi, W.G. (1981) *Theory Z reading*. MA: Addison Wesley, 577-594.
- Øvretveit, J. (2009) Understanding and improving patient safety: the psychological, social and cultural dimensions. *Journal of Health Organization and Management* 23(6), 581-596.

- Owonaro, P., Eneyi, K. and Eniojukan, J. (2015) Pharmacy Patient Safety: 1. Evaluation of Pharmacy Patient Safety Culture in a tertiary \_ hospital in Bayelsa State, Nigeria. *Sch. Acad. J. Pharm* 4(2), 108-116.
- Pasamar, S., Diaz-Fernandez, M. and de la Rosa-Navarro, M.D. (2019) Human capital: the link between leadership and organizational learning. *European Journal of Management and Business Economics*. <https://doi.org/10.1108/EJMBE-08-2017-0003> Accessed 21 February 2019.
- Patankar, M.S. (2012) *Safety culture: Building and sustaining a cultural change in aviation and healthcare*. Ashgate Publishing, Ltd.
- Patankar, M.S., Brown, J.P., Sabin, E.J. and Bigda-Peyton, T.G. (2013) Safety Culture: Building and Sustaining a Cultural Change in Aviation and Healthcare. <http://search.proquest.com/docview/1346648126?accountid=458> Accessed 26 June 2018.
- Pedersen, C.A., Schneider, P.J. and Santell, J.P. (2001) ASHP national survey of pharmacy practice in hospital settings: prescribing and transcribing--2001. *American Journal of Health-System Pharmacy* 58(23), 2251-2266.
- Pedersen, C.A., Schneider, P.J. and Scheckelhoff, D.J. (2013) ASHP national survey of pharmacy practice in hospital settings: monitoring and patient education—2012. *American Journal of Health-System Pharmacy* 70(9), 787-803.
- Pedersen, C.A., Schneider, P.J. and Scheckelhoff, D.J. (2017) ASHP national survey of pharmacy practice in hospital settings: prescribing and transcribing—2016. *American Journal of Health-System Pharmacy* 74(17), 1336-1352.
- Pedler, M. and Hsu, S.W., 2018. Regenerating the learning organization: towards an alternative paradigm. *The Learning Organization* 26(1), 97-112.
- Phipps, D. L., Noyce, P. R., Parker, D. and Ashcroft, D. M. (2009) Medication safety in community pharmacy: a qualitative study of the sociotechnical context. *BMC health services research* 9 (1), 158 -168.
- Pidgeon, N.F. (1991) Safety culture and risk management in organizations. *Journal of cross-cultural psychology* 22(1), 129-140.
- Pierre, M.S. (2013) Safe patient care—safety culture and risk management in otorhinolaryngology. *GMS current topics in otorhinolaryngology, head and neck surgery* 12.
- Pilnick, A. (1999) “Patient counseling” by pharmacists: advice, information, or instruction? *Sociological Quarterly* 40(4), 613-622.
- Popper, M. and Lipshitz, R. (2000) Organizational learning mechanisms, culture, and feasibility. *Management learning* 31(2), 181-196.
- Pronovost, P. and Sexton, B. (2005) *Assessing safety culture: guidelines and recommendations*. BMJ Publishing Group Ltd.
- Pronovost, P.J., Cardo, D.M., Goeschel, C.A., Berenholtz, S.M., Saint, S. and Jernigan, J.A. (2011) A research framework for reducing preventable patient harm. *Clinical Infectious Diseases* 52(4), 507-513.
- Pronovost, P.J., Goeschel, C.A., Marsteller, J.A., Sexton, J.B., Pham, J.C. and Berenholtz, S.M. (2009) Framework for patient safety research and improvement. *Circulation* 119(2), 330-337.
- Raeissi, P., Reisi, N. and Nasiripour, A.A. (2018) Assessment of patient safety culture in Iranian academic hospitals: strengths and weaknesses. *Journal of patient safety*. (Publish Ahead of Print)

- Raelin, J.A. (1997) A model of work-based learning. *Organization science* 8(6), 563-578.
- Raelin, J.A. (2000) *Work-based learning: The new frontier of management development*. Addison-Wesley.
- Rashid, M. (2007) Developing scales to evaluate staff perception of the effects of the physical environment on patient comfort, patient safety, patient privacy, family integration with patient care, and staff working conditions in adult intensive care units: a pilot study. *Critical Care Nursing Quarterly* 30(3), 271-283.
- Raspin, P. (2011) Failing to learn? How organizations can learn from failure. *Strategic Direction* 27(1), 4-6.
- Ratnapalan, S. and Uleryk, E. (2014) Organizational learning in health care organizations. *Systems* 2(1), 24-33.
- Reason, J. (1990) *Human error*. Cambridge University Press.
- Rerup, C. and Feldman, M.S. (2011) Routines as a source of change in organizational schemata: The role of trial-and-error learning. *Academy of Management Journal* 54(3), 577-610.
- Richards, K. (2003) *Qualitative inquiry in TESOL*. Springer.
- Rickles, N.M., Wertheimer, A.I. and Smith, M.C. (2010) *Social and behavioral aspects of pharmaceutical care*. Jones & Bartlett Publishers.
- Rindfleisch, A., Malter, A.J., Ganesan, S. and Moorman, C. (2008) Cross-sectional versus longitudinal survey research: Concepts, findings, and guidelines. *Journal of marketing research* 45(3), 261-279.
- Ringle, C., Wende, S. and Becker, J. (2014) *SmartPLS 3. SmartPLS, Hamburg*.
- Ringle, C.M., Wende, S. and Becker, J.-M. (2015) *SmartPLS 3*. Boenningstedt: SmartPLS GmbH.
- Rivard, P.E., Parker, V.A. and Rosen, A.K. (2013) Quality improvement for patient safety: Project-level versus program-level learning. *Health care management review* 38(1), 40-50.
- Rivard, P.E., Rosen, A.K. and Carroll, J.S. (2006) Enhancing patient safety through organizational learning: Are patient safety indicators a step in the right direction? *Health services research* 41(4p2), 1633-1653.
- Rivard, P.E., Rosen, A.K. and Carroll, J.S. (2006) Enhancing patient safety through organizational learning: Are patient safety indicators a step in the right direction? *Health services research* 41(4p2), 1633-1653.
- Rogers, A.E., Hwang, W.-T., Scott, L.D., Aiken, L.H. and Dinges, D.F. (2004) The working hours of hospital staff nurses and patient safety. *Health affairs* 23(4), 202-212.
- Rowley, E. and Waring, J. (2011) *A socio-cultural perspective on patient safety*. Ashgate Publishing, Ltd.
- Saadat, V. and Saadat, Z. (2016) Organizational Learning as a Key Role of Organizational Success. *Procedia - Social and Behavioral Sciences* 230, 219-225.
- Sadegh Sharifirad, M. (2011) The Dimensions of Learning Organization Questionnaire (DLOQ) A cross-cultural validation in an Iranian context, *International Journal of Manpower*, 32(5/6), 661-676.
- Sadler-Smith, E., Spicer, D.P. and Chaston, I. (2001) Learning orientations and growth in smaller firms. *Long range planning* 34(2), 139-158.

- Salkind, N.J. (2010) *Encyclopedia of research design*. Vol. 1. Sage.
- Sammer, C. and James, B. (2011) Patient safety culture: the nursing unit leader's role. *Online J Issues Nurse* 16(3), 1-8.
- Samsuri, S.E., Lin, L.P. and Fahrni, M.L. (2015) Safety culture perceptions of pharmacists in Malaysian hospitals and health clinics: a multicentre assessment using the Safety Attitudes Questionnaire. *BMJ open* 5(11), e008889.
- Sanghera, N., Chan, P.-Y., Khaki, Z.F., Planner, C., Lee, K.K., Cranswick, N.E. and Wong, I.C. (2006) Interventions of hospital pharmacists in improving drug therapy in children. *Drug safety* 29(11), 1031-1047.
- Sarkar, U. (2016) *Tip of the iceberg: patient safety incidents in primary care*. BMJ Publishing Group Ltd.
- Sarstedt, M., Henseler, J. and Ringle, C.M. (2011) Multigroup analysis in partial least squares (PLS) path modeling: Alternative methods and empirical results. *Measurement and research methods in international marketing*. Emerald Group Publishing Limited. 195-218.
- Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research methods for business students*. 5<sup>th</sup> edition. London Pearson education.
- Schein, E. (1992) *Organisational Culture and Leadership*, Jossey Bass. San Francisco, CA.
- Schein, E. (2009) *Organizational Culture and Leadership*, Jossey-Bass San Francisco, CA.
- Schein, E.H. (1983) The role of the founder in creating organizational culture. *Organizational dynamics* 12(1), 13-28.
- Schein, E.H. (1990) *Organizational culture*. Vol. 45. American Psychological Association.
- Schmidt, N.H., Ereik, K., Kolbe, L.M. and Zarnekow, R. (DATE) Towards a procedural model for sustainable information systems management, *IEEE*, 1-10.
- Schneider, W.J. and Newman, D.A. (2015) Intelligence is multidimensional: Theoretical review and implications of specific cognitive abilities. *Human Resource Management Review* 25(1), 12-27.
- Schnipper, J.L., Kirwin, J.L., Cotugno, M.C., Wahlstrom, S.A., Brown, B.A., Tarvin, E., Kachalia, A., Horng, M., Roy, C.L. and McKean, S.C. (2006) Role of pharmacist counseling in preventing adverse drug events after hospitalization. *Archives of internal medicine* 166(5), 565-571.
- Senge, P. (1990) *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday/Currency.
- Senge, P. (2004) Creating Communities Create a group of learning leaders. *Executive Excellence* 21(9), 4-5.
- Sessa, V.I. and London, M. (2015) *Continuous learning in organizations: Individual, group, and organizational perspectives*. Psychology Press.
- Setiadi, A.P., Wibowo, Y., Irawati, S., Setiawan, E., Presley, B., Gudka, S. and Wardhani, A.S. (2017) Indonesian pharmacists' and pharmacy students' attitudes towards collaboration with physicians. *Pharmacy Practice (Granada)* 15(4).
- Sexton, J.B., Thomas, E.J. and Helmreich, R.L. (2000) Error, stress, and teamwork in medicine and aviation: cross sectional surveys. *BMJ* 320(7237), 745-749.

- Shojania, K.G., Duncan, B.W., McDonald, K.M., Wachter, R.M. and Markowitz, A. (2001) Making health care safer: a critical analysis of patient safety practices. *Evid Rep Technol Assess (Summ)* 43(1), 668.
- Shuttleworth, M. (2008) Descriptive research design. Retrieved Apr 15, 2015.
- Sim, J. and Wright, C.C. (2005) The kappa statistic in reliability studies: use, interpretation, and sample size requirements. *Physical therapy* 85(3), 257-268.
- Singer, S., Lin, S., Falwell, A., Gaba, D. and Baker, L. (2009a) Relationship of safety climate and safety performance in hospitals. *Health services research* 44(2p1), 399-421.
- Singer, S.J. and Vogus, T.J. (2013) Reducing hospital errors: interventions that build safety culture. *Annual Review of Public Health* 34, 373-396.
- Singer, S.J., Benzer, J.K. and Hamdan, S.U. (2015) Improving health care quality and safety: the role of collective learning. *Journal of Healthcare Leadership* 7, 91.
- Singer, S.J., Falwell, A., Gaba, D.M., Meterko, M., Rosen, A., Hartmann, C.W. and Baker, L. (2009b) Identifying organizational cultures that promote patient safety. *Health care management review* 34(4), 300-311.
- Singer, S.J., Moore, S.C., Meterko, M. and Williams, S. (2012) Development of a short-form learning organization survey: The LOS-27. *Medical Care Research and Review* 69(4), 432-459.
- Sinitsa, K. (2000) Learning individually: A life-long perspective. *Educational Technology & Society* 3(1), 17-23.
- Sitkin, S.B. (1992) Learning through failure: The strategy of small losses, *Research in Organizational Behavior*, 14, 231-266.
- Sivanandy, P., Maharajan, M.K., Rajiah, K., Wei, T.T., Loon, T.W. and Yee, L.C. (2016) evaluation of patient safety culture among Malaysian retail pharmacists: results of a self-reported survey. *Patient preference and adherence* 10, 1317.
- Smeulders, M., Lucas, C. and Vermeulen, H. (2014) Effectiveness of different nursing handover styles for ensuring continuity of information in hospitalised patients. *The Cochrane Library*.
- Smith, L., McGowan, L., Moss-Barclay, C., Wheeler, J., Knass, D. and Chrystyn, H. (1997) An investigation of hospital generated pharmaceutical care when patients are discharged home from hospital. *British journal of clinical pharmacology* 44(2), 163-165.
- Smith, V., Devane, D., Begley, C.M. and Clarke, M. (2011) Methodology in conducting a systematic review of systematic reviews of healthcare interventions. *BMC medical research methodology* 11(1), 15.
- Smolla, M., Gilman, R.T., Galla, T. and Shultz, S. (2015) Competition for resources can explain patterns of social and individual learning in nature. *Proc. R. Soc. B* 282 (1815), 20151405.
- Snape, D. and Spencer, L. (2003) Introduction to Research Method. J, Ritchie and Lewis, J. (2003) *Qualitative Research Practice: A Guide for Social Science Students and Researchers* (Ed). Sage Publications, London.
- Song, J.H., Joo, B.K. and Chermack, T.J. (2009) The dimensions of learning organization questionnaire (DLOQ): A validation study in a Korean context, *Human Resource Development Quarterly*, 20(1), 43-64.
- Sorra, J. and Nieva, V.F. (2004) *Hospital survey on patient safety culture*. Agency for Healthcare Research and Quality.

- Sorra, J.S. and Dyer, N. (2010) Multilevel psychometric properties of the AHRQ hospital survey on patient safety culture. *BMC health services research* 10(1), 199.
- Spencer-Oatey, H. and Franklin, P. (2012) What is culture. *A compilation of quotations. GlobalPAD Core Concepts*, 1-22.
- Speroff, T., Nwosu, S., Greevy, R., Weinger, M., Talbot, T., Wall, R., Deshpande, J., France, D., Ely, E. and Burgess, H. (2010) Organisational culture: variation across hospitals and connection to patient safety climate. *BMJ Quality & Safety* 19(6), 592-596.
- Spradley, J.P. and McCurdy, D.W. (1980) *Anthropology, the cultural perspective*. John Wiley & Sons.
- Starbuck, H. (2017) Organizational learning and unlearning. *The Learning Organization* 24(1), 30-38.
- Steiner, S., Vidović, A. and Dinjar, S. (2002) Safety Culture in Aviation. *Promet-Traffic-Traffico, Scientific Technical Journal for Traffic Theory and Practice* 14(Supplement No. 1), 211-216.
- Stewart, A., Bergsagel, P., Greipp, P., Dispenzieri, A., Gertz, M., Hayman, S., Kumar, S., Lacy, M., Lust, J. and Russell, S. (2007) A practical guide to defining high-risk myeloma for clinical trials, patient counseling and choice of therapy. *Leukemia* 21(3), 529.
- Sujan, M., Huang, H. and Braithwaite, J. (2016) Why do healthcare organisations struggle to learn from experience? A safety-II perspective. *Proceedings of Healthcare Systems Ergonomics and Patient Safety (HEPS)*. Toulouse 2016.
- Sun, P.Y. and Scott, J.L. (2003) Exploring the divide—organizational learning and learning organization, *The Learning Organization*, 10(4), 202-215.
- Symonds, P.M. (1924) On the Loss of Reliability in Ratings Due to Coarseness of the Scale. *Journal of Experimental Psychology* 7(6), 456.
- Szeinbach, S., Seoane-Vazquez, E., Parekh, A. and Herderick, M. (2007) Dispensing errors in community pharmacy: perceived influence of sociotechnical factors. *International Journal for Quality in Health Care* 19(4), 203-209.
- Taitz, J.M., Lee, T.H. and Sequist, T.D. (2012) *A framework for engaging physicians in quality and safety*. BMJ Publishing Group Ltd.
- Teng, C.-I., Shyu, Y.-I. L., Chiou, W.-K., Fan, H.-C. and Lam, S.M. (2010) Interactive effects of nurse-experienced time pressure and burnout on patient safety: a cross-sectional survey. *International Journal of Nursing Studies* 47(11), 1442-1450.
- Tereanu, C., Smith, S.A., Ghelase, M.S., Sampietro, G., Molnar, A., Dragoescu, A., Furtunescu, F.L., Stanescu, C., Gavrila, O.A. and Patrascu, A. (2018) Psychometric Properties of the Romanian Version of the Hospital Survey on Patient Safety Culture (HSOPS). *Maedica* 13(1), 34.
- Thistlethwaite, J.E., Davies, D., Ekeocha, S., Kidd, J.M., MacDougall, C., Matthews, P., Purkis, J. and Clay, D. (2012) The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. *Medical teacher* 34(6), e421-e444.
- Thomas, L. and Galla, C. (2012) Building a culture of safety through team training and engagement. *BMJ Qual Saf*, bmjqs-2012-001011.
- Top, M. and Tekingündüz, S. (2015) Patient safety culture in a turkish public hospital: A study of nurses' perceptions about patient safety. *Systemic Practice and Action Research* 28(2), 87-110.



- Tosey, P., Visser, M. and Saunders, M.N. (2012) The origins and conceptualizations of 'triple-loop' learning: A critical review. *Management Learning* 43(3), 291-307.
- Tsang, W. and Zahra, A. (2008) Organizational unlearning. *Human Relations* 61 (10), 1435-1462.
- Tsilimingras, D. and Bates, D.W. (2008) Addressing postdischarge adverse events: a neglected area. *The Joint Commission Journal on Quality and Patient Safety* 34(2), 85-97.
- Ulanimo, V.M., O'Leary-Kelley, C. and Connolly, P.M. (2007) Nurses' perceptions of causes of medication errors and barriers to reporting. *Journal of nursing care quality* 22(1), 28-33.
- Usher, R. and Bryant, I. (1989) Adult Education as Theory. *Practice and Research*. : The Captive Triangle. Routledge, London, UK
- Vaishnavi, V.K. and Kuechler, W. (2015) *Design science research methods and patterns: innovating information and communication technology*. CRC Press.
- Vassalou, L. (2001) The learning organization in health-care services: theory and practice. *Journal of European Industrial Training* 25(7), 354-365.
- Vidal-Salazar, M.D., Cordón-Pozo, E. and Ferrón-Vilchez, V. (2012) Human resource management and developing proactive environmental strategies: The influence of environmental training and organizational learning. *Human Resource Management* 51(6), 905-934.
- Vince, R. (2004) Action learning and organizational learning: Power, politics and emotion in organizations. *Action Learning: Research and Practice* 1(1), 63-78.
- Visser, M. (2017) Learning and unlearning: a conceptual note. *The Learning Organization* 24(1), 49-57.
- Wachter, R.M. and Pronovost, P.J. (2009) Balancing "no blame" with accountability in patient safety. *N Engl J Med* 361(14), 1401-1406.
- Wagner, E.H. (2000) The role of patient care teams in chronic disease management. *BMJ* 320(7234), 569-572.
- Wakefield, B.J., Blegen, M.A., Uden-Holman, T., Vaughn, T., Chrischilles, E. and Wakefield, D.S. (2001) Organizational culture, continuous quality improvement, and medication administration error reporting. *American Journal of Medical Quality* 16(4), 128-134.
- Walczak, S. (2008) Knowledge management and organizational learning: An international research perspective. *The Learning Organization* 15(6), 486-494.
- Walliman, N. (2011) *Your research project: Designing and planning your work*. Sage Publications.
- Walpol, R.L., Chen, T.F., Fois, R.A., Ashcroft, D.M. and Lalor, D.J. (2017) Evaluation of a survey tool to measure safety climate in Australian hospital pharmacy staff. *Research in Social and Administrative Pharmacy* 13(4), 789-795.
- Webair, H.H., Al-Assani, S.S., Al-Haddad, R.H., Al-Shaeeb, W.H., Selm, M.A.B. and Alyamani, A.S. (2015) Assessment of patient safety culture in primary care setting, Al-Mukala, Yemen. *BMC family practice* 16(1), 136.
- Weick, K. and Sutcliffe, K. (2001) *Managing the unexpected: Assuring high performance in an age of uncertainty*. San Francisco: Wiley 1 (3), 5.
- Weick, K.E. (1991) The nontraditional quality of organizational learning. *Organization science* 2(1), 116-124.

- Weinzimmer, L.G. and Esken, C.A. (2017) Learning From Mistakes: How Mistake Tolerance Positively Affects Organizational Learning and Performance. *The Journal of Applied Behavioral Science* 53(3), 322-348.
- Wenger, E. (2009) *Communities of practice in health and social care*. John Wiley & Sons.
- Westat, R. (2012) *Translation Guidelines for the AHRQ Surveys on Patient Safety Culture*. The Agency for Healthcare Research and Quality. Accessed 7 May 2018.
- Westat, R.M.F. (2012a) *Preliminary comparative results: pharmacy survey on patient safety culture*. Department of Health and Human Services. Accessed 6 May 2018.
- Westat, R.M.F. and Joann S (2012) *Pharmacy survey on patient safety culture: user's guide*. Agency for Healthcare Research and Quality, 2012. Accessed 6 May 2018.
- WHO (2004) *World alliance for patient safety: forward programme 2005*. Geneva: World Health Organization.
- Wilkins, A.L. and Ouchi, W.G. (1983) Efficient cultures: Exploring the relationship between culture and organizational performance. *Administrative science quarterly*, 468-481.
- Williams, S.D., Phipps, D.L. and Ashcroft, D.M. (2013) Understanding the attitudes of hospital pharmacists to reporting medication incidents: a qualitative study. *Research in Social and Administrative Pharmacy* 9(1), 80-89.
- Wiseman, E. (2007) The institutionalization of organizational learning: A neoinstitutional perspective. *Proceedings of OLKC*.
- Woolf, S.H. (2004) Patient safety is not enough: targeting quality improvements to optimize the health of the population. *Annals of Internal Medicine* 140(1), 33-36.
- Worsley, C., Webb, S. and Vaux, E. (2016) Training healthcare professionals in quality improvement. *Future Hospital Journal* 3(3), 207-210.
- Wu, A.W. (2018) *Reaching common ground: The role of shared mental models in patient safety*. SAGE Publications Sage UK: London, England.
- Xuanyue, M., Yanli, N., Hao, C., Pengli, J. and Mingming, Z. (2013) Literature review regarding patient safety culture. *Journal of Evidence-Based Medicine* 6(1), 43-49.
- Yang, B., Watkins, K.E. and Marsick, V.J. (2004) The construct of the learning organization: Dimensions, measurement, and validation, *Human Resource Development Quarterly*, 15(1), 31-55.
- Yang, S., Kim, D., Choi, H.J. and Chang, M.J. (2016) A comparison of patients' and pharmacists' satisfaction with medication counseling provided by community pharmacies: a cross-sectional survey. *BMC health services research* 16(1), 131.
- Yanow, D. (2000) Seeing organizational learning: A cultural view. *Organization* 7(2), 247-268.
- Yanow, D. and Schwartz-Shea, P. (2015) *Interpretation and method: Empirical research methods and the interpretive turn*. Routledge.
- Yeganeh, B. and Kolb, D. (2009) Mindfulness and experiential learning. *OD Practitioner* 41(3), 13-18.
- Zimring, C., Joseph, A. and Choudhary, R. (2004) *The role of the physical environment in the hospital of the 21st century: A once-in-a-lifetime opportunity*. Report to The Center for Health Design for the Designing the 21st Century Hospital Project, 1-69.

## Appendix A: Pharmacy Survey on Patient Safety Culture & Learning Organization Survey -27

### 1- Pharmacy Survey on Patient Safety Culture

This survey asks for your opinions about patient safety in this pharmacy and takes about (20) minutes to complete. Answer only about the pharmacy location/store where you received this survey.

- ▶ **Staff** means **EVERYONE who works in this pharmacy**, including pharmacists, pharmacy technicians, pharmacy clerks, etc.
- ▶ **Patient safety** is the prevention of patient harm resulting from the processes of health care delivery. In the pharmacy setting, it means that:
  - The right patient receives the right medication in the right dose at the right time by the right route, and
  - The patient or caregiver understands the purpose and proper use of the medication.
- ▶ **Mistake** is any type of medication error, mistake, incident, or quality-related event, regardless of whether or not it reaches the patient or results in patient harm. Mistakes may be related to, or include:
  - Prescribing, transcribing, dispensing, administering, monitoring (use of medication), unsafe conditions or procedures in the pharmacy, etc.

SECTION A: Working in This Pharmacy							
How much do you agree or disagree with the following statements? Remember, "staff" means everyone working in this pharmacy.	Strongly Disagree ▼	Disagree ▼	Slightly Disagree ▼	Neutral ▼	Slightly Agree ▼	Agree ▼	Strongly Agree ▼
1. This pharmacy is well organized	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>	<input type="checkbox"/> <sub>7</sub>
2. Staff treat each other with respect	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>	<input type="checkbox"/> <sub>7</sub>
3. Technicians in this pharmacy receive the training they need to do their jobs	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>	<input type="checkbox"/> <sub>7</sub>
4. Staff in this pharmacy clearly understand their roles and responsibilities	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>	<input type="checkbox"/> <sub>7</sub>
5. This pharmacy is free of clutter or mess	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>	<input type="checkbox"/> <sub>7</sub>
6. Staff in this pharmacy have the	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>	<input type="checkbox"/> <sub>7</sub>

skills they need to do their jobs well							
7. The physical layout of this pharmacy supports good workflow	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
8. Staff who are new to this pharmacy receive adequate orientation	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
9. Staff work together as an effective team	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
10. Staff get enough training from this pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

## SECTION B: Communication and Work Pace

How often do the following statements apply to this pharmacy?	Never	Very infrequently	Infrequently	sometimes	frequently	Very frequently	Always
1. Staff ideas and suggestions are valued in this pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2. We encourage patients to talk to pharmacists about their medications	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
3. Staff take adequate breaks during their shifts	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
4. We have clear expectations about exchanging important prescription information across shifts	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
5. Staff feel comfortable asking questions when they are unsure about something	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
6. We have standard procedures for communicating prescription information across shifts	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
7. Our pharmacists spend enough time talking to patients about how to use their medications	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
8. Staff in this pharmacy discuss mistakes	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

9. We feel rushed when processing prescriptions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
10. It is easy for staff to speak up to their supervisor/ manager about patient safety concerns in this pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
11. Our pharmacists tell patients important information about their new prescriptions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
12. We have enough staff to handle the workload	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
13. When patient safety issues occur in this pharmacy, staff discuss them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
<b>How often do the following statements apply to this pharmacy?</b>	<b>Never</b>	<b>Very infrequently</b>	<b>Infrequently</b>	<b>Sometimes</b>	<b>frequently</b>	<b>Very frequently</b>	<b>Always</b>
14. The status of problematic prescriptions is well communicated across shifts	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
15. In this pharmacy, we talk about ways to prevent mistakes from happening again	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
16. Interruptions/distractions in this pharmacy (from phone calls, faxes, customers, etc.) make it difficult for staff to work accurately	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

### SECTION C: Patient Safety and Response to Mistakes

How much do you agree or disagree with the following statements?	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. Staff are treated fairly when they make mistakes	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2. When a mistake happens, we try to figure out what problems in the work process led	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

to the mistake							
3. This pharmacy places more emphasis on describing medicine or sales than on patient safety.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
4. This pharmacy helps staff learn from their mistakes rather than punishing them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
5. When the same mistake keeps happening, we change the way we do things	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
6. This pharmacy is good at preventing mistakes	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
7. We look at staff actions <u>and</u> the way we do things to understand why mistakes happen in this pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
8. Staff feel like their mistakes are held against them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
<b>How much do you agree or disagree with the following statements?</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Slightly disagree</b>	<b>Neutral</b>	<b>Slightly Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
9. The way we do things in this pharmacy reflects a strong focus on patient safety	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
10. Mistakes have led to positive changes in this pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

## SECTION D: Documenting Mistakes

**In this pharmacy, how often are the following types of mistakes documented (in writing OR tracked electronically)?**

How often do the following statements apply to <u>this pharmacy</u> ?	Never documented ▼	Very infrequently documented ▼	Infrequently documented ▼	Sometimes documented ▼	Frequently documented ▼	Very frequently documented ▼	Always documented ▼
1. When a mistake reaches the patient and <b><u>could cause harm but does not</u></b> , how often is it documented?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2. When a mistake reaches the patient but <b><u>has no potential to harm the patient</u></b> , how often is it documented?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
3. When a mistake <b><u>that could have harmed the patient is corrected BEFORE the medication leaves the pharmacy</u></b> , how often is it documented?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

### SECTION E: Overall Rating

1. Think back on the survey topics and the definition of patient safety—dispensing the right medication accurately and making sure patients understand their medications and how to use them:

**How do you rate this pharmacy on patient safety?**

Poor ▼	Fair ▼	Good ▼	Very good ▼	Excellent ▼
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

## Learning Organization Survey – 27

This survey asks for your opinions about the extent of the implementation of the organizational learning in this pharmacy and takes about (10) minutes to complete. Answer only about the pharmacy location/store where you received this survey.

**Please respond to each item in terms of how descriptive of the pharmacy that you work in**

<b>How often do the following statements apply to this pharmacy?</b>	<b>Highly inaccurate</b> ▼	<b>Moderately inaccurate</b> ▼	<b>Slightly inaccurate</b> ▼	<b>Neither accurate nor inaccurate</b> ▼	<b>Slightly accurate</b> ▼	<b>Moderately accurate</b> ▼	<b>Highly accurate</b> ▼
1- In this pharmacy, people value new ideas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2- Differences in opinions are welcomed in this pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
3- In this pharmacy, people are open to alternative ways of getting work done	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
4- People in this pharmacy are eager to share information about what doesn't work as well as to share information about what does work	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
5- This pharmacy engages in productive conflict and debate during discussions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
6- In this pharmacy, we frequently identify and discuss underlying assumptions that might affect key decisions	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
7- If you make a mistake in this pharmacy, it is often held against you	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

**Please respond to each item in terms of how descriptive of the pharmacy that you work in**

<b>How often do the following statements apply to this pharmacy?</b>	<b>Never</b> ▼	<b>Very Infrequently</b> ▼	<b>Infrequently</b> ▼	<b>Sometimes</b> ▼	<b>Frequently</b> ▼	<b>Very Frequently</b> ▼	<b>Always</b> ▼
8- My manager(s) establish (es) forums for and provide(s) time and resources for identifying problems and organizational challenges.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7



9- My manager(s) establish (es) forums for and provide(s) time and resources for reflecting and improving on past performance.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
10- My manager(s) listen(s) attentively.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
11- My manager(s) invite(s) input from others in discussions.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

<b>How often do the following statements apply to this pharmacy?</b>	<b>highly inaccurate</b> ▼	<b>moderately inaccurate</b> ▼	<b>slightly inaccurate</b> ▼	<b>neither accurate nor inaccurate</b> ▼	<b>slightly accurate</b> ▼	<b>moderately accurate</b> ▼	<b>highly accurate</b> ▼
12- This pharmacy experiments frequently with new product/ service offerings	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
13- This pharmacy experiments frequently with new ways of working	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
14- This pharmacy frequently employs pilot projects or simulations when trying out new ideas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
15- This pharmacy has a formal process for conducting and evaluating experiments or new ideas	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
16- Experienced employees in this pharmacy receive training when shifting to a new position	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
17- Experienced employees in this pharmacy receive training when new initiatives are launched	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
18- Newly hired employees in this pharmacy receive adequate training	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
19- This pharmacy has forums for meeting with and learning from: Experts from outside the organization	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
20- This pharmacy has forums for meeting with and learning from: Experts from other	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

departments/ teams/divisions							
21- This pharmacy has forums for meeting with and learning from: Customers/clients	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
22- This pharmacy regularly conducts post audits, after-action reviews, and debriefings	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
23- There is simply no time for reflection in this pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
24- In this pharmacy, people are too busy to invest time in improvement	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
25- This pharmacy frequently compares its performance to: Best-in-class organizations	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
26- This pharmacy frequently compares its performance to: Other similar pharmacy	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
27- This pharmacy consistently collects information on technological trends	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

### Background Questions

#### 1. How long have you worked in this pharmacy?

<input type="checkbox"/> a. Less than 6 months
<input type="checkbox"/> b. 6 months to less than 1 year.
<input type="checkbox"/> c. 1 year to less than 3 years
<input type="checkbox"/> d. 3 years to less than 6 years
<input type="checkbox"/> e. 6 years to less than 12 years
<input type="checkbox"/> f. 12 years or more

#### 2. Typically, how many hours per week do you work in this pharmacy?

<input type="checkbox"/> a. 1 to 16 hours per week
<input type="checkbox"/> b. 17 to 31 hours per week
<input type="checkbox"/> c. 32 to 40 hours per week
<input type="checkbox"/> d. More than 40 hours per week

**3. What is your position in this pharmacy? Check ONE category that best applies to your job.**

<input type="checkbox"/> a. Pharmacist (including pharmacy manager, lead pharmacist, pharmacist-in-charge, staff pharmacist)
<input type="checkbox"/> b. Pharmacy technician (including lead technician and staff technician).
<input type="checkbox"/> c. Pharmacy clerk or pharmacy cashier
<input type="checkbox"/> d. Pharmacy student intern/extern
<input type="checkbox"/> e. Other (Please write your job title)

Comments	

**Please feel free to write any comments about how things are done or could be done in your pharmacy that might affect patient safety.**

--

**THANK YOU FOR COMPLETING THIS SURVEY.**

## **Appendix B: Permission to translate LOS-27 and PSOPSC into Arabic**

### **Permission to translate LOS-27**

Wed 21/12/2016, 21:22

Dear Wael,

You're welcome to translate the survey into Arabic. It would be fascinating to see it once converted, and I'd be curious to know what other changes may be required to address any cultural differences.

Best regards,

Sara

Sara J. Singer, MBA, PhD

Professor

Department of Health Policy and Management, Harvard T.H. Chan School of Public Health

Department of Medicine, Harvard Medical School

Mongan Institute for Health Policy, Massachusetts General Hospital

677 Huntington Avenue

Boston, MA 02115

617-432-7139 tel

617-432-3699 fax

[ssinger@hsph.harvard.edu](mailto:ssinger@hsph.harvard.edu)

<https://twitter.com/SaraJeanSinger>

## Permission to translate PSOPSC



DEPARTMENT OF HEALTH & HUMAN SERVICES

Agency for Healthcare  
Research and Quality

5600 Fishers Lane  
Rockville MD 20857  
www.ahrq.gov

December 6, 2016

Wael Abdallah  
Doctoral student  
University of Bradford  
Bradford, West Yorkshire, UK

Dear Wael Abdallah:

Here is a signed letter of permission to translate and use the AHRQ Community Pharmacy Survey on Patient Safety Culture. I am responding on behalf of Ms. Randie Siegel, Associate Director, Office of Communications and Knowledge Transfer, Publishing and Electronic Dissemination. I handle the majority of permission requests for our Agency.

You have AHRQ's permission to use and translate the Community Pharmacy Survey on Patient Safety Culture for your research at six hospital pharmacies in Kuwait. The Community Pharmacy Survey was designed for use in pharmacies dealing with ambulatory care patients, so some of the questions may not be relevant for a hospital pharmacy, unless the hospital has a separate pharmacy serves ambulatory patients in its geographic area. If the hospital pharmacy only provides medications to patients treated in the hospital, the AHRQ Hospital Survey on Patient Safety Culture would be more appropriate. A number of Arabic translations of this survey exist, and the Westat staff can help you obtain one.

We ask that you give appropriate source credit to AHRQ on the survey forms that you print: "Translated from the Community Pharmacy Survey of Patient Safety Culture, with permission of the Agency for Healthcare Research and Quality, Rockville, Maryland USA." Also give reference citations in any professional articles or book chapters that may come from this work. Do not reprint the AHRQ or HHS logos on the materials. We also ask that the reprinted materials be distributed free or at the cost of production, and not for profit.

Best wishes on the success of your research! Please feel free to contact me if you have additional questions about copyright permissions regarding AHRQ materials other than the Safety Culture Surveys. For technical assistance on the survey, contact [SafetyCultureSurveys@westat.com](mailto:SafetyCultureSurveys@westat.com).

Sincerely,

David I. Lewin, M.Phil.  
Health Communications Specialist/Manager of Copyrights & Permissions  
Office of Communications and Knowledge Transfer  
Agency for Healthcare Research and Quality  
5600 Fishers Lane  
Room # 07N58D / Mail Stop # 07N94A  
Rockville, MD 20857 USA  
Email: [David.Lewin@ahrq.hhs.gov](mailto:David.Lewin@ahrq.hhs.gov)  
Phone: +1 301-427-1895  
Fax: +1 301-427-1783

## Appendix C: Arabic Version of LOS-27 and PSOPSC

### إستبيان حول المنظمة التعليمية و ثقافة السلامة لدى المرضى في صيدليات المستشفى

#### تعليمات

#### الهدف من وراء هذه الدراسة البحثية

دراسة العلاقة بين الاستبيان الذي يقيس المنظمة التعليمية والاستبيان الذي يقيس ثقافة سلامة المرضى في الصيدليات في صيدليات مستشفيات الكويت- عندما يوزع كلا الاستبيانان لنفس المشاركين

#### الاجراءات

تشمل هذه الدراسة استبيانان الأول لقياس مدى تنفيذ التعليم التنظيمي في الصيدلية والثاني لدراسة رأيك حول قضايا سلامة المرضى، والخطأ الطبي والإبلاغ عن الأحداث ويستغرق إتمام هذان الاستبيان حوالي 25 دقيقة

#### الملكية والتوثيق

ويجري توزيع هذا الاستبيان كجزء من مشروع بحث بالاقتران مع كلية الادارة في جامعة براندفور في احدى صيدليات المستشفيات الستة التي سيتم اختيارها.

الردود والبيانات التي يتم جمعها تصبح من ملكية الباحث وسيتم استخدامها في وثيقة سردية تعكس البيانات والنتائج. فالردود المتعلقة بالمعلومات الديمغرافية بأكملها لن تكون ضمن وثيقة البحث ولكن ستستخدم في تقييم التباينات في النتائج المتعلقة بالعوامل المؤثرة في الثقافة التنظيمية.

#### الفوائد المحتملة

وسيتم تزويد المستشفيات المشاركة بنتائج هذه الدراسة لتحديد المجالات المحددة التي يمكن أن تحسن ثقافة السلامة والتعامل الانظمة التعليمية في تحسين النتائج التنظيمية.

#### السرية

معلوماتك الشخصية مثل اسمك وهويتك و رقم الهوية ليس لهم اي علاقة بالدراسة في اي لحظة. وسيحافظ الباحث قانون صارم من السرية ولن يتم مناقشة او الافصاح عن اي معلومة شخصية في حال من الاحوال خارج نطاق نتائج الدراسة. فأسم الموضوع الذي يحدد الخصائص او التعليقات او المعلومات الاضافية لن يتم مناقشتها خارج فريق البحث.

#### إنهاء مشاركتك

لك الحرية في عدم المشاركة في الدراسة البحثية هذه. وبإمكانك إنهاء مشاركتك في أي لحظة حتى بعد اتمامك هذه الوثيقة.

#### المصادر المعلوماتية المتوفرة

سوف يقوم الباحث الرئيسي بالاجابة على أية سؤال يدور حول هذه الدراسة

رقم الهاتف: 99750951

الا سم: وائل عبدالله

#### إقرار

لقد قرأت وفهمت نموذج الموافقة هذا واتطوع للمشاركة في الدراسة البحثية هذه و سأحصل على نسخة منه. لقد تطوعت في المشاركة بإرادتي ولكنني ادرك بأن هذه الموافقة لا تسلب مني أي حقوق قانونية في حالة الإهمال أو إي خطأ قانوني لأي شخص مشارك في هذا الدراسة البحثية. وكذلك اتفهم بأن لا شيء في صيغة الموافقة هذه يهدف الى استبدال أي من القوانين المعمول بها سواء المحلية، والوطنية او على مستوى الدولة.

إسم المشارك:

التاريخ:

توقيع الباحث الرئيسي:

## (1) استبيان منظمة التعلم – 27

يسأل هذا الاستبيان عن آرائكم حول مدى تنفيذ التعلم التنظيمي في هذه الصيدلية ويستغرق حوالي 10 دقائق لإكماله. الإجابة فقط عن الصيدلية / مخزن حيث تلقيت هذه الدراسة

**التعلم التنظيمي:** يوصف بأنه عملية التحول التي تسعى لمساعدة المؤسسات على تطوير واستخدام المعرفة لتغيير وتحسين أنفسهم بشكل مستمر

الى أي مدى تنطبق العبارات التالية على هذه الصيدلية؟	غير دقيق للغاية	غير دقيق باعتدال	غير دقيق قليلا	لا غير دقيق ولا دقيق	دقيق قليلا	دقيق باعتدال	دقيق للغاية
1. في هذه الصيدلية، الناس يعطون قيمة للأفكار الجديدة	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2. الاختلاف في وجهات النظر مرحب به في هذه الصيدلية	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
3. في هذه الصيدلية الناس منفتحون على الطرق البديلة للوصول لانجاز العمل	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
4. الناس في هذه الصيدلية حريصون على تبادل المعلومات حول ما لا يعمل وكذلك لتبادل المعلومات حول ما يفعل العمل	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
5. العاملون في هذه الصيدلية يشاركون في الخلاف والجدال المثمر اثناء النقاش	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
6. ونحن في هذه الصيدلية، كثير من الأحيان نحدد ونناقش الافتراضات التي قد تؤثر على القرارات الرئيسية	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
7. إذا قمت بخطأ في العمل في هذه الصيدلية، غالبا ما يتم إجراء ضحك	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

الى أي مدى تنطبق العبارات التالية على هذه الصيدلية؟	أبدا	نادر جدا	نادر	نادرا	أحيانا	غالبا	غالبا جدا	دائما
8. مديري في العمل يحدد اجتماعات ويوفر الوقت والموارد لتحديد المشاكل والتحديات التي تواجه العمل في الصيدلية	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
9. مديري في العمل يحدد اجتماعات ويوفر الوقت والموارد لتطوير العمل في الصيدلية نسبة للاداء في السابق	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
10. مديري في العمل يستمع لنا بانتباه	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
11. مديري في العمل يدعو لمساهمة الآخرين في النقاش	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8

الى أي مدى تنطبق العبارات التالية على هذه الصيدلية؟	غير دقيق للغاية	غير دقيق باعتدال	غير دقيق قليلا	لا غير دقيق ولا دقيق	دقيق قليلا	دقيق باعتدال	دقيق للغاية
12. - في هذه الصيدلية يتم تجربة المنتجات او الخدمات الجديدة التي يتم عرضها	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
13. - في هذه الصيدلية يتم تجربة طرق جديدة للعمل	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
14. في هذه الصيدلية كثير من الأحيان توظف مشاريع تجريبية أو المحاكاة عند محاولة الخروج بأفكار جديدة	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
15. في هذه الصيدلية يتم استخدام اجراءات رسمية لإجراء وتقييم التجارب والأفكار الجديدة	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
16. الموظفون من ذوي الخبرة في هذه الصيدلية يتلقون تدريباً عندما يتحولون إلى موقع جديد	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
17. الموظفون من ذوي الخبرة في هذه الصيدلية يتلقون تدريباً عندما يتم إطلاق مبادرات جديدة	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
18. الموظفون الذين يتم تعيينهم حديثاً في هذه الصيدلية يتلقون تدريباً ملائماً	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
19. في هذه الصيدلية يتم عقد اجتماعات مع والتعلم من أصحاب الخبرات من خارج المستشفى	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
	غير دقيق للغاية	غير دقيق باعتدال	غير دقيق قليلا	لا غير دقيق ولا دقيق	دقيق قليلا	دقيق باعتدال	دقيق للغاية
20. في هذه الصيدلية يتم عقد اجتماعات مع والتعلم من أصحاب الخبرات من الأقسام والادارات الأخرى	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
21. في هذه الصيدلية يتم عقد اجتماعات مع والتعلم من المرضى المراجعين والزبائن	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
22. في هذه الصيدلية يجري بشكل منتظم استعراض و مراجعة آخر الأعمال واستخلاص المعلومات	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
23. في هذه الصيدلية العمل يتم ببساطة ولا يوجد وقت للتفكير والمراجعة	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
24. في هذه الصيدلية الموظفون مشغولون جداً في استثمار الوقت في تحسين العمل	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
25. في هذه الصيدلية في كثير من الأحيان ما يتم مقارنة أدائها مع أفضل الصيدليات من فنتها	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
26. في هذه الصيدلية في كثير من الأحيان ما يتم مقارنة أدائها مع الصيدليات التي تشابهها	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
27. في هذه الصيدلية تجمع المعلومات بشكل مستمر عن التكنولوجيا الحديثة	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7



## (2) استبيان حول ثقافة سلامة المرضى في الصيدلية

يسأل هذا الاستطلاع عن آرائكم حول سلامة المرضى في هذه الصيدلية ويستغرق حوالي 15 دقيقة لإكمالها. الإجابة فقط عن الصيدلية أو المخزن حيث تلقيت هذه الدراسة

**الموظفين :** كل من يعمل في هذه الصيدلية، بما في ذلك الصيادلة وفنيي الصيدلة، وكتبة الصيدلة

**سلامة المرضى:** هي الوقاية من ضرر المريض الناتجة عن عمليات تقديم الرعاية الصحية. في الصيدلية، فهذا يعني أن:

المريض الصحيح يتلقى العلاج الصحيح في الجرعة المناسبة في الوقت المناسب بالطريقة الصحيحة، و

المريض أو أهل المريض يفهموا الغرض والاستخدام السليم للأدوية

**الخطأ:** هو أي نوع من الأخطاء الطبية، خطأ، حادث أو حدث ذات الصلة بالجودة ، بغض النظر عن وجود أو عدم وصوله إلى المريض أو نتائج في ضرر المريض. اخطاء قد تكون ذات صلة، أو ما يلي

كتاب الوصفة، وصرفها، وإدارة ورصد (استخدام الدواء) أو شروط أو إجراءات غير آمنة في الصيدلية

### قسم (أ) : العمل في هذه الصيدلية

إلى أي مدى تتفق أو تختلف مع العبارات التالية؟ تذكر، "الموظفين" يعني كل من يعمل في هذه الصيدلية	لا أوافق بشدة	لا أوافق	لا أوافق إلى حد ما	محايد	أوافق إلى حد ما	أوافق	أوافق وبشدة
1. هذه الصيدلية مرتبة بشكل جيد	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. يعامل الموظفون بعضهم البعض باحترام	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. يتلقى الفنيين في هذه الصيدلية التدريب الذي يحتاجون إليه للقيام بأعمالهم	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. الموظفون في هذه الصيدلية يفهمون بوضوح أدوارهم ومسؤولياتهم	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. هذه الصيدلية خالية من الفوضى	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. الموظفون في هذه الصيدلية لديهم المهارات التي يحتاجونها لأداء عملهم بشكل جيد	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. التصميم الفعلي لهذه الصيدلية يدعم حسن سير العمل	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. الموظفون الجدد في هذه الصيدلية يتلقون التوجيه المناسب	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. موظفوا الصيدلية يعملون معاً كفريق فعال	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. الموظفون يتلقون التدريب الكافي في هذه الصيدلية	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### قسم (ب) : الاتصالات وتيرة العمل

إلى أي مدى تنطبق العبارات التالية على هذه الصيدلية؟	أبداً	نادراً جداً	نادراً	أحياناً	غالباً	غالباً جداً	دائماً
--	-------	----------------	--------	---------	--------	-------------	--------

<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	1. أفكار الموظفين واقتراحاتهم موضع تقدير في هذه الصيدلية
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	2. نحن نشجع المرضى لأجراء محادثات مع الصيادلة حول أدويتهم
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	3. موظفوا الصيدلية يأخذوا فرص كافية للراحة أثناء نوبات الدوام
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	4. يمكن ان نتبادل المعلومات حول وصفة مهمة عبر (الشفقات) او الدوامات المختلفة
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	5. يشعر الموظفون أثناء النقاش وطرح الأسئلة بالراحة عندما يكونوا غير متأكدين من شيء ما
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	6. لدينا إجراءات موحدة لإيصال المعلومات حول الوصفة الطبية خلال نوبات العمل
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	7. الصيدلة في هذه الصيدلية تتفق ما يكفي من الوقت التحدث مع المرضى حول كيفية استخدام الأدوية الخاصة بهم
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	8. الموظفون في هذه الصيدلية يناقشوا الأخطاء معا
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	9. نحن نشعر بالتسرع عند معالجة وتحضير الوصفات
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	10. فمن السهل على لموظفين في الكلام مع المشرف / المدير حول المخاوف على سلامة المرضى في هذه الصيدلية
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	11. الصيدلة في هذه الصيدلية يقولون للمرضى معلومات هامة عن وصفات أدويتهم الجديدة
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	12. لدينا عدد كاف من الموظفين في هذه الصيدلية للتعامل مع عبء العمل
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	13. عندما تحدث مشكلات حول سلامة المرضى في هذه الصيدلية، الموظفون يناقشونها
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	14. المشاكل حول الوصفات يتم الإبلاغ عنها بشكل جيد خلال نوبات العمل
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	15. في هذه الصيدلية، نحن نتحدث عن وسائل لمنع الأخطاء من الحدوث مرة أخرى
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	16. المعوقات / المليكات في هذه الصيدلية مثل المكالمات الهاتفية والفاكسات والعملاء تجعل من الصعب على الموظفين العمل بدقة

### قسم (ت) : سلامة المرضى والرد على الأخطاء

إلى أي مدى تتفق أو تختلف مع العبارات التالية؟	لا أوافق بشدة	لا أوافق	لا أوافق إلى حد ما	محايد	أوافق إلى حد ما	أوافق بشدة
1. يعامل الموظفون إلى حد ما بانصاف عندما يخطئون	<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2
2. عندما يحدث خطأ، ما نحاول معرفة ما هي المشاكل في سير العمل والتي أدت إلى هذا خطأ	<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2
3. هذه الصيدلية تضع المزيد من التركيز على المبيعات وصرف الدواء أكثر من التركيز على سلامة المرضى	<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2
4. هذه الصيدلية تساعد الموظفين على التعلم من أخطائهم بدلا من معاقبتهم	<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2

<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	5. عندما يبقى نفس الخطأ يحدث، نحن نغير الطريقة التي نؤدي بها الأشياء
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	6. هذه الصيدلية جيدة في الحد من الأخطاء
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	7. نحن نتطلع في أعمال الموظفين والطريقة التي نؤدي بها الأشياء أن نفهم لماذا يحدث الأخطاء في هذه الصيدلية
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	8. يشعر الموظفون أن أخطائهم تحمل ضدهم
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	9. الطريقة التي نؤدي بها الأشياء في هذه الصيدلية تعكس التركيز بشكل قوي على سلامة المرضى
<input type="checkbox"/> 7	<input type="checkbox"/> 6	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	10. الأخطاء تؤدي إلى إحداث تغييرات إيجابية في هذه الصيدلية

### قسم (ج) : توثيق الأخطاء

في هذه الصيدلية، ما عدد المرات التي يتم توثيق الأنواع التالية من الأخطاء (كتابيا أو إلكترونيا)؟

إلى أي مدى تتفق أو تختلف مع العبارات التالية؟	أبدا لا توثق	نادرا جدا ما توثق	نادرا ما توثق	أحيانا ما توثق	غالبا ما توثق	غالبا جدا ما توثق	دائما ما توثق
1. عندما يصل خطأ للمريض، ويمكن أن يسبب ضررا ولكنه لم يسبب، إلى أي مدى يمكن أن يوثق؟	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2. عندما يصل خطأ للمريض ولكن لا يوجد لديه احتمالية لإيذاء المريض، إلى أي مدى يمكن أن يوثق؟	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
3. عندما يتم تصحيح الخطأ الذي يمكن أن يضر المريض قبل أن يغادر الدواء الصيدلية، إلى أي مدى يمكن أن يوثق؟	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

### قسم (ح) : التقييم العام

فكر مرة أخرى بموضوعات الاستبيان وتعريف سلامة المريض وصرف الدواء المناسب بدقة والتأكد من المرضى على فهم الأدوية وكيفية الاستفادة منها:

كيف تقيم هذه الصيدلية على سلامة المرضى؟

ضعيف	مقبول	جيد	جيد جدا	ممتاز
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

### المعلومات الشخصية

1. منذ متى وانت تعمل بالصيدلية

<input type="checkbox"/> أقل من 6 شهور	<input type="checkbox"/> من 3 سنوات إلى أقل من 6 سنوات
<input type="checkbox"/> من 6 شهور إلى أقل من سنة	<input type="checkbox"/> من 6 سنوات إلى أقل من 12 سنة
<input type="checkbox"/> من سنة إلى أقل من 3 سنوات	<input type="checkbox"/> أكثر من 12 سنة

2. عادة، كم ساعة في الأسبوع تعمل في هذه الصيدلية؟

<input type="checkbox"/> من ساعة إلى 16 ساعة بالاسبوع	<input type="checkbox"/> من 32 ساعة إلى 40 ساعة بالاسبوع
<input type="checkbox"/> من 17 ساعة إلى 31 ساعة بالاسبوع	<input type="checkbox"/> أكثر من 40 ساعة بالاسبوع

3. ما هو موقفكم في هذه الصيدلية؟ اختر فئة واحدة على ان تكون الأفضل بما ينطبق على عملك؟

<input type="checkbox"/> صيدلي (بما في ذلك مدير الصيدلة، صيدلي أول ، الصيدلي المسؤول، صيدلي موظف)
<input type="checkbox"/> فني الصيدلة ( بما في ذلك فني صيدلة أول , فني صيدلة موظف)
<input type="checkbox"/> كاتب الصيدلية او امين صندوق الصيدلية
<input type="checkbox"/> صيدلي متدرب
<input type="checkbox"/> وظيفة أخرى ( يرجى تحديد المسمى الوظيفي)

### قسم (ذ): تعليقاتكم

لا تتردد في كتابة أي تعليقات حول كيفية إنجاز الأمور أو يمكن عمله في الصيدلية التي قد تؤثر على سلامة المرضى

شكرا لكم على اتمام تعبئة هذا الاستبيان